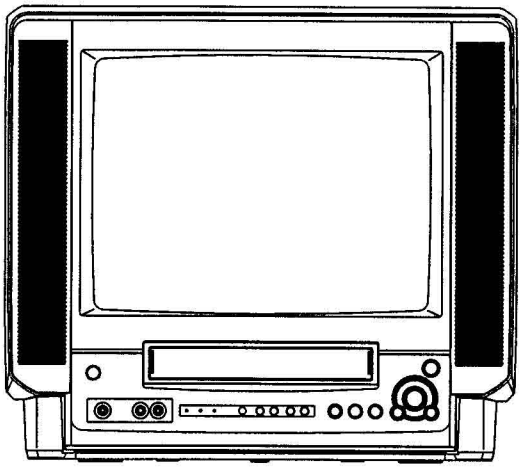
aiwa
SERVICE



SERVICE MANUAL

INTEGRATED COLOR TV / VIDEO CASSETTE RECORDER

BASIC TAPE MECHANISM : OVD-6

SPECIFICATIONS

POWER REQUIREMENTS	230V AC, 50Hz
POWER CONSUMPTION	55W Standby 6W
WEIGHT	Approx.12.8 kg (28.16 lbs.)
DIMENSIONS	435 mm (W) x 370.5 mm (D) x 384.5 mm (H) (17 1/4 x 14 5/8 x 15 1/4 in.)
PICTURE TUBE	14 in. (34 cm "V"), 90 degree deflection
TUNER SYSTEM	Frequency synthesized tuner
CHANNEL COVERAGE	UHF: 21 to 69
TV SYSTEM	I
HORIZONTAL RESOLUTION	240 lines
OPERATING TEMPERATURE	5°C to 40°C
VIDEO RECORDING SYSTEM	Rotary 2 head helical scanning system
VIDEO SIGNAL SYSTEM	PAL colour signal, 625 lines, 50 fields
VIDEO HEAD	Azimuth 2 heads
USABLE CASSETTES	VHS video cassettes

TAPE SPEED	PAL SP: 23.39 mm/sec. LP: 11.69 mm/sec. NTSC (playback SP only) 33.35 mm/sec.
RECORDING/PLAYBACK TIME	PAL SP: 4 hours 20 minutes max. with E-260 tape LP: 8 hours 40 minutes max. with E-260 tape NTSC (playback SP only) 3 hours max. with T-180 tape
VIDEO INPUT	1.0Vp-p, 75 ohm, unbalanced
VIDEO OUTPUT	1.0Vp-p, 75 ohm, unbalanced
VIDEO S/N	53dB (nominal)
AUDIO INPUT	SCART: –3.8 dBs, 50K ohm RCA: –3.8 dBs, 50K ohm
AUDIO OUTPUT	SCART: –3.8 dBs less than 1K ohm
AUDIO TRACK	1 track (mono)

- **Design and specifications are subject to change without notice.**

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SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 2 screws ①.
2. Remove the 2 screws ②.
3. Remove the 2 screws ③ which are used for holding the Back Cabinet.
4. Remove the AC cord from the AC cord hook ④.
5. Remove the Back Cabinet in the direction of arrow.

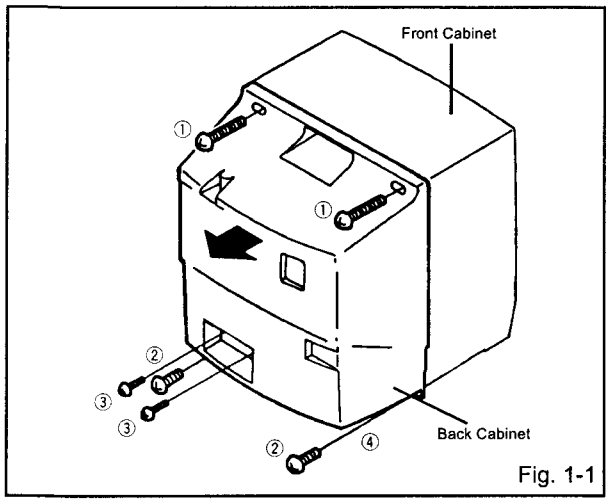


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap. (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors: (CP801 and CP850).
3. Remove the CRT PCB in the direction of arrow.

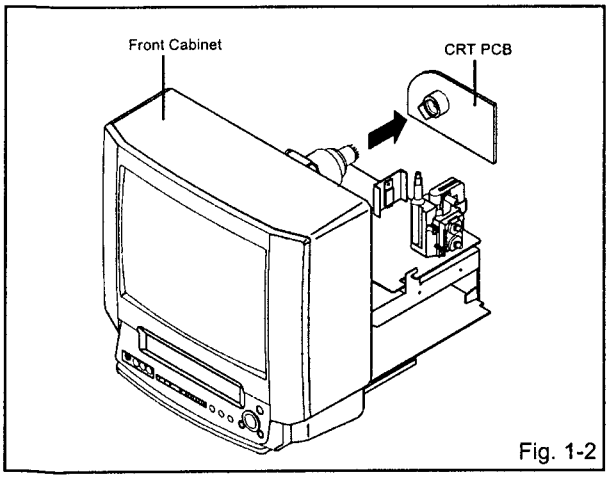


Fig. 1-2

1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors: (CP351, CP757, CP302, CP401, CP501 and CP502).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

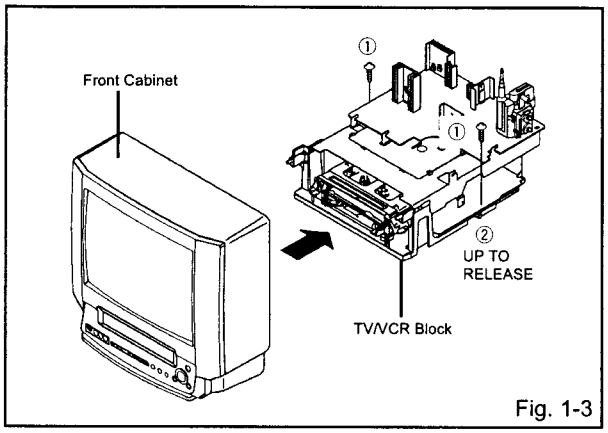


Fig. 1-3

1-4: MAIN PCB (Refer to Fig. 1-4)

1. Remove the screw ①.
2. Remove the Main PCB Holder.
3. Remove the 2 screws ②.
4. Remove the 3 screws ③.
5. Disconnect the following connectors: (CP810, CP820 and CP805).
6. Remove the Main PCB in the direction of arrow.

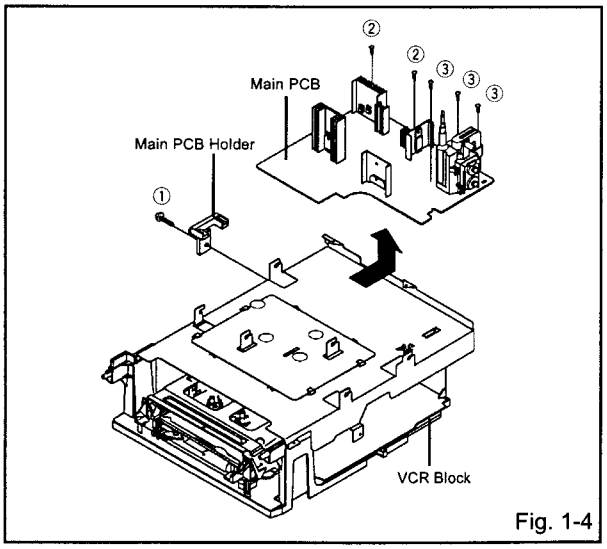


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: DECK SHIELD PLATE (Refer to Fig. 1-5)

1. Remove the 2 screws ①.
2. Remove the 4 screws ②.
3. Remove the screw ③.
4. Remove the Deck Shield Plate in the direction of arrow (A).
5. Remove the screw ④.
6. Remove the Shield Plate Bottom in the direction of arrow (B).

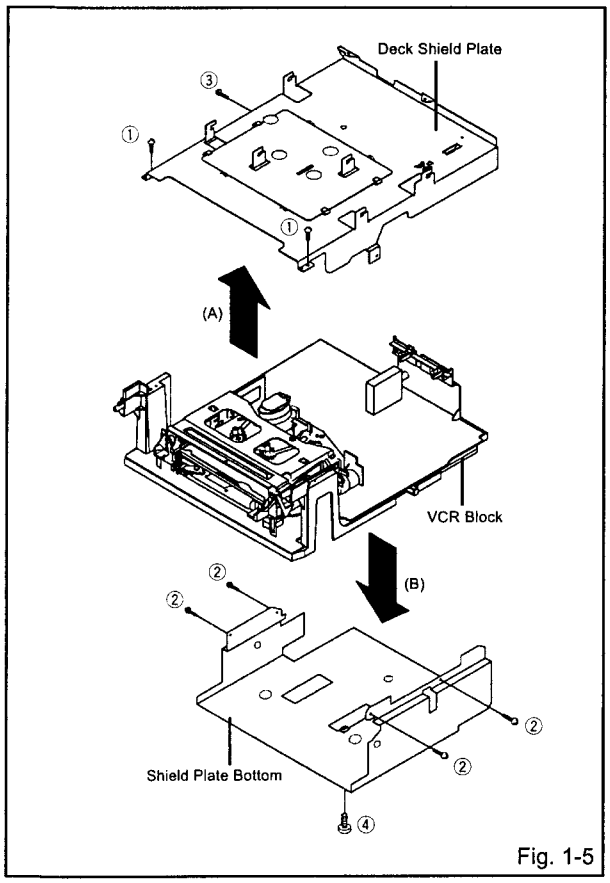


Fig. 1-5

1-6: DECK CHASSIS (Refer to Fig. 1-6)

1. Remove the 3 screws ①.
2. Disconnect the following connectors:
   (CD1002, CP1004, CP1005, CP1006, CP4001, CP4004 and CP4005).
3. Remove the Deck Chassis in the direction of arrow.

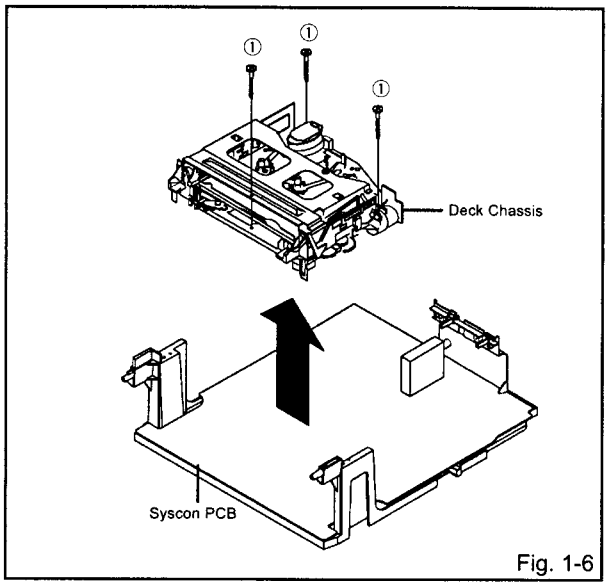


Fig. 1-6

1-7: JACK PLATE AND SYSCON PCB (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the Syscon PCB in the direction of arrow (A).
3. Remove the 2 screws ②.
4. Unlock the 2 supports ③.
5. Remove the Jack Plate in the direction of arrow (B).

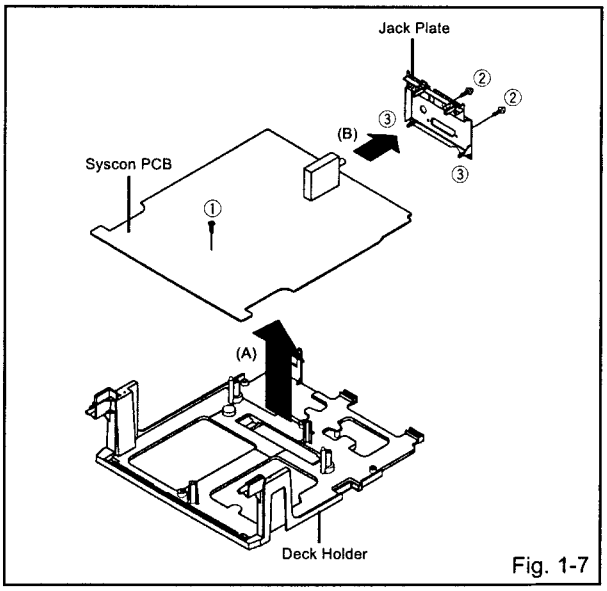


Fig. 1-7

DISASSEMBLY INSTRUCTIONS

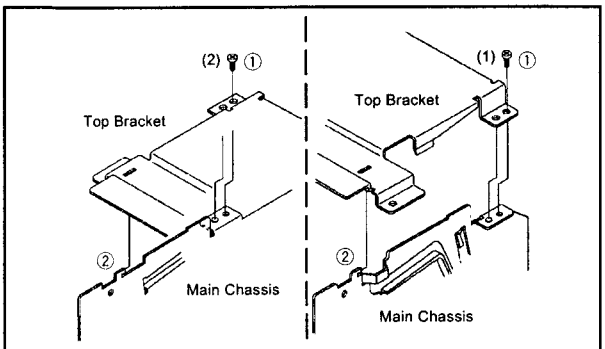
2. REMOVAL OF DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Remove the 2 screws ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

When you install the Top Bracket, install the screw (1) first, then install the screw (2).



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-1

2-2: FLAP LEVER/TAPE GUIDE R (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the Polyslider Washer ①.
3. Remove the Flap Lever.
4. Unlock the 3 supports ② and remove the Tape Guide R.

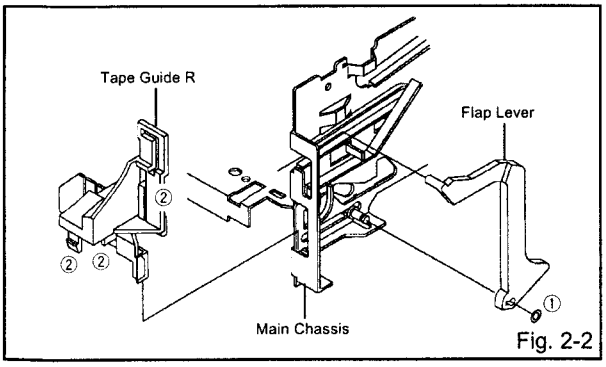
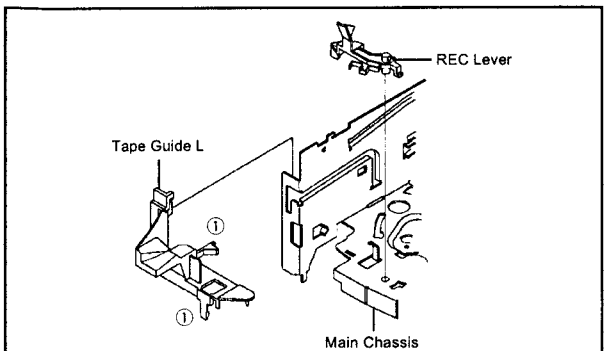


Fig. 2-2

2-3: TAPE GUIDE L (Refer to Fig. 2-3-A)

1. Move the Cassette Holder Ass'y to the back side.
2. Unlock the 2 supports ① and remove the Tape Guide L.
3. Remove the REC Lever. (Recorder only)

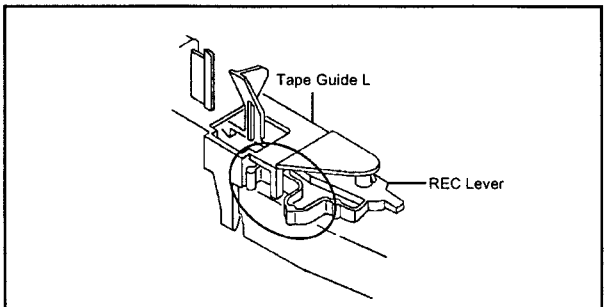


• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-A

NOTE

When you install the Tape Guide L, install as shown in the circle of Fig. 2-3-B. **(Refer to Fig. 2-3-B)**



• The REC Lever is not installed on the Video Cassette Player.

Fig. 2-3-B

2-4: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-4)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

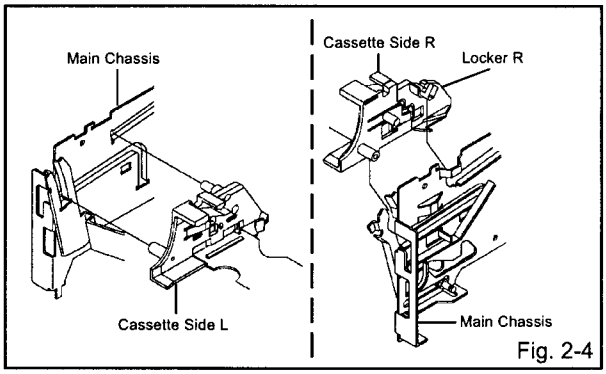


Fig. 2-4

2-5: CASSETTE SIDE L/R (Refer to Fig. 2-5)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.

NOTE

When you install the Cassette Side L/R, be sure to move the Locker L/R after installing.

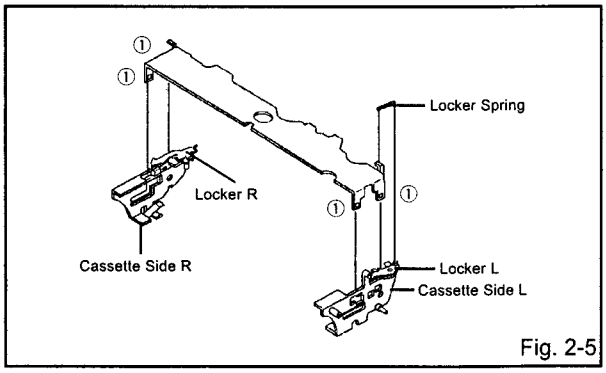


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LINK ASS'Y (Refer to Fig. 2-6)

1. Set the Link Ass'y to the Eject position.
2. Remove the (A) side of the Link Ass'y first, then remove the (B) side.

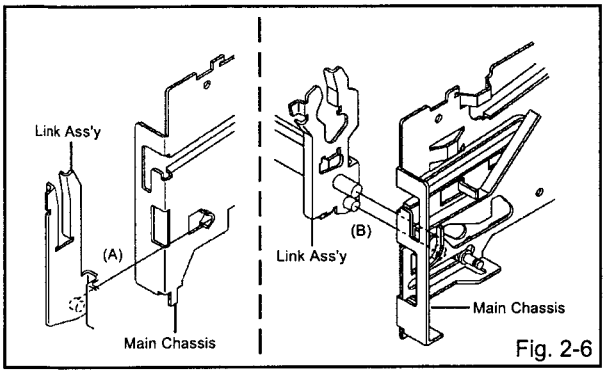


Fig. 2-6

2-7: LOADING MOTOR ASS'Y (Refer to Fig. 2-7)

1. Remove the Link Lever.
2. Remove the Dumper Spring.
3. Remove the 2 screws ①.
4. Unlock the support ② and remove the Loading Motor Ass'y.
5. Unlock the 2 supports ③ and remove the Deck PCB (BOT).

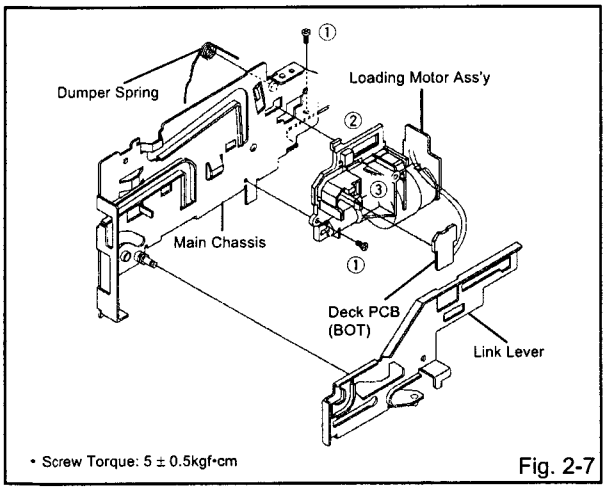


Fig. 2-7

2-8: SENSOR COVER L (Refer to Fig. 2-8)

1. Unlock the support ① and remove the Sensor Cover L.
2. Unlock the 2 supports ② and remove the Deck PCB (EOT).

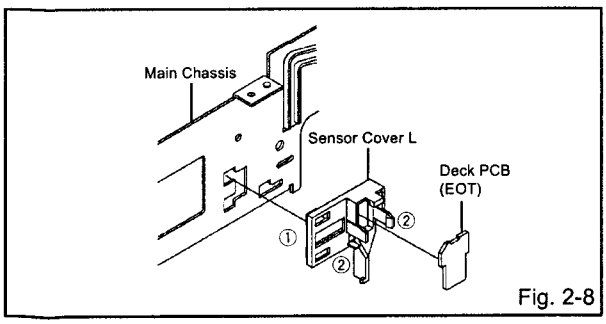


Fig. 2-8

2-9: TENSION ASS'Y (Refer to Fig. 2-9-A)

1. Move the Inclined S Ass'y to the back side.
2. Unlock the support ① and remove the S Reel Stopper.
3. Remove the Tension Spring.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Remove the Tension Adjust.
6. Unlock the 2 supports ③ and remove the Tension Band Ass'y.
7. Unlock the support ④ and remove the Tension Holder.

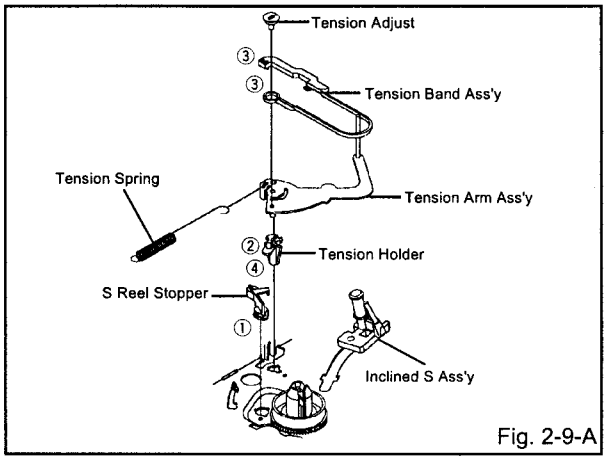


Fig. 2-9-A

NOTE

When you install the Tension Adjust, install as shown in Fig. 2-9-B. **(Refer to Fig. 2-9-B)**

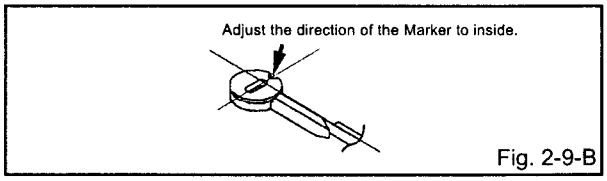


Fig. 2-9-B

2-10: T BRAKE ASS'Y (Refer to Fig. 2-10)

1. Remove the T Brake Spring.
2. Remove the T Brake Ass'y.

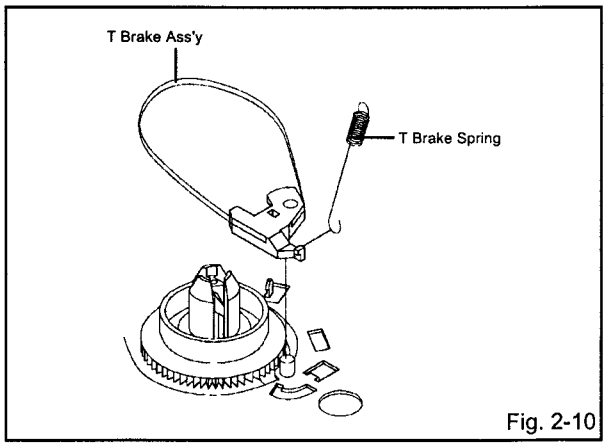


Fig. 2-10

DISASSEMBLY INSTRUCTIONS

2-11: S REEL/T REEL ASS'Y (Refer to Fig. 2-11)

1. Remove the Idler Ass'y.
2. Remove the S Reel and T Reel Ass'y.
3. Remove the 2 Polyslider Washers ①.

NOTE

1. Take care not to damage the gears of the S Reel, T Reel Ass'y and Idler Ass'y.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel Ass'y. (Use gloves.) **(Refer to Fig. 2-11)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and oil it (KYODO OIL Slidas #150). (If you do not oil, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

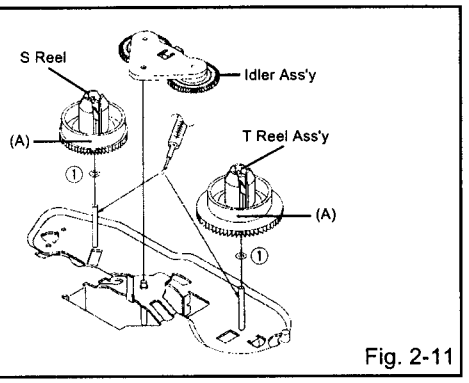
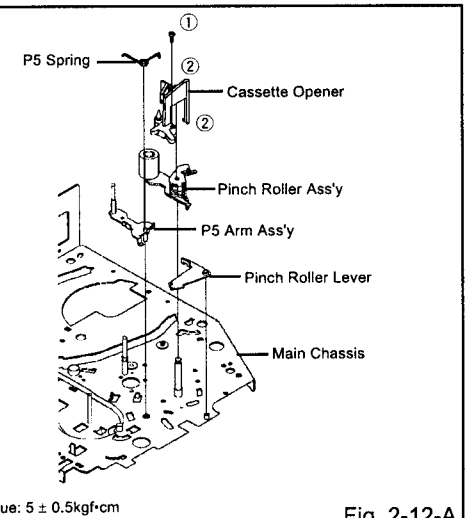


Fig. 2-11

2-12: PINCH ROLLER ASS'Y/P5 ARM ASS'Y (Refer to Fig. 2-12-A)

1. Remove the P5 Spring.
2. Remove the screw ①.
3. Unlock the 2 supports ② and remove the Cassette Opener.
4. Remove the Pinch Roller Ass'y, Pinch Roller Lever and P5 Arm Ass'y.



• Screw Torque: 5 ± 0.5kgf•cm

Fig. 2-12-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. When you install the Pinch Roller Ass'y, install as shown in the circle. **(Refer to Fig. 2-12-B)**

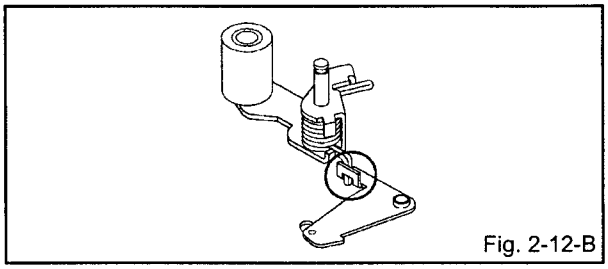


Fig. 2-12-B

2-13: A/C HEAD (Refer to Fig. 2-13-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-13-B. **(Refer to Fig. 2-13-B)**
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

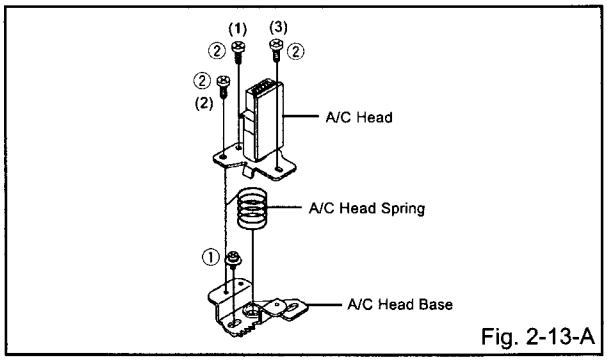


Fig. 2-13-A

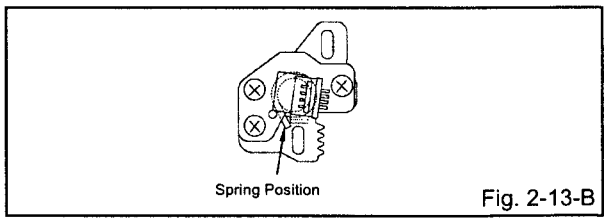
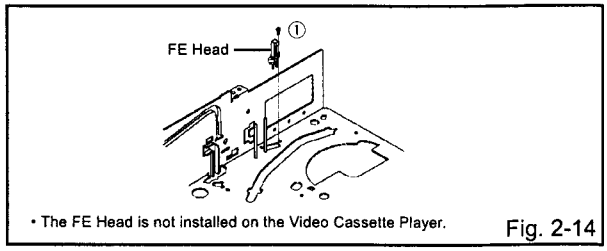


Fig. 2-13-B

2-14: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-14)

1. Remove the screw ①.
2. Remove the FE Head.



• The FE Head is not installed on the Video Cassette Player.

Fig. 2-14

DISASSEMBLY INSTRUCTIONS

2-15: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-15)

1. Unlock the support ① and remove the AHC Ass'y.
2. Remove the 3 screws ②.
3. Remove the Cylinder Unit Ass'y.

NOTE

When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.

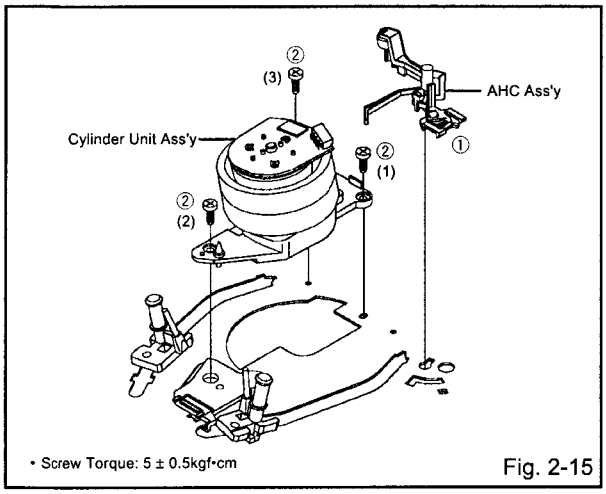


Fig. 2-15

2-16: CAPSTAN DD UNIT (Refer to Fig. 2-16)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.

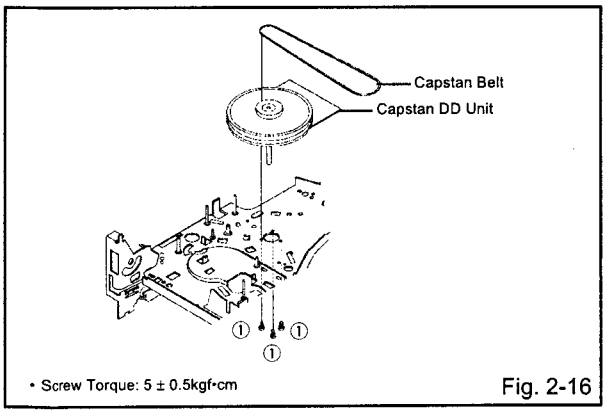


Fig. 2-16

2-17: MIDDLE GEAR/MAIN CAM (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①, then remove the Middle Gear.
2. Remove the E-Ring, then remove the Main Cam, Link Lever Spacer and P5 Cam.
3. Remove the Polyslider Washer ②, then remove the Pinch Roller Cam.
4. Remove the Polyslider Washer ③, then remove the Joint Gear.

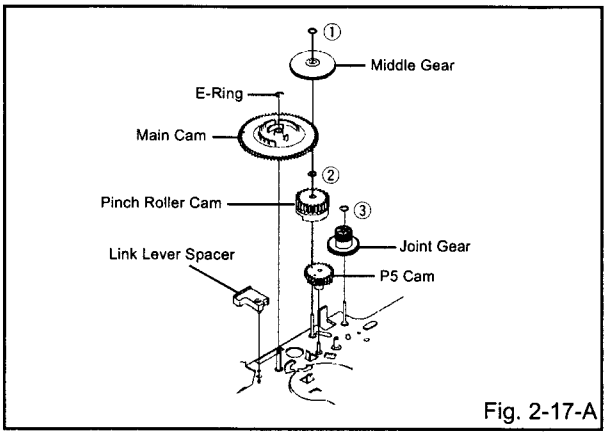


Fig. 2-17-A

NOTE

When you install the Pinch Roller Cam, P5 Cam and Main Cam, align each marker. **(Refer to Fig. 2-17-B)**

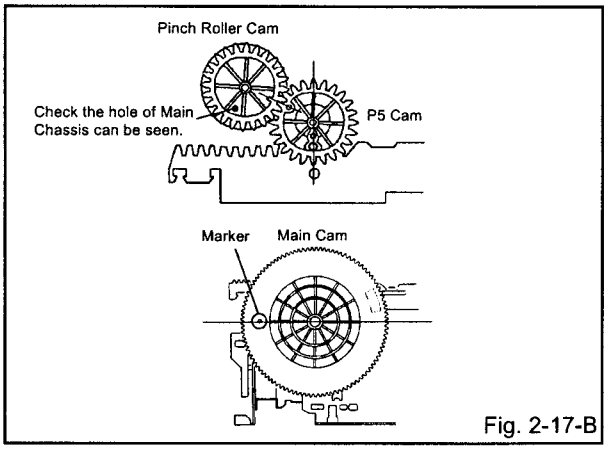


Fig. 2-17-B

2-18: CLUTCH ASS'Y (Refer to Fig. 2-18)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y, Ring Spring, Ring Clutch, Gear Clutch and Polyslider Washer ②.

NOTE

When you install the Clutch Ass'y, oil the shaft (KYODO OIL Slidas #150).

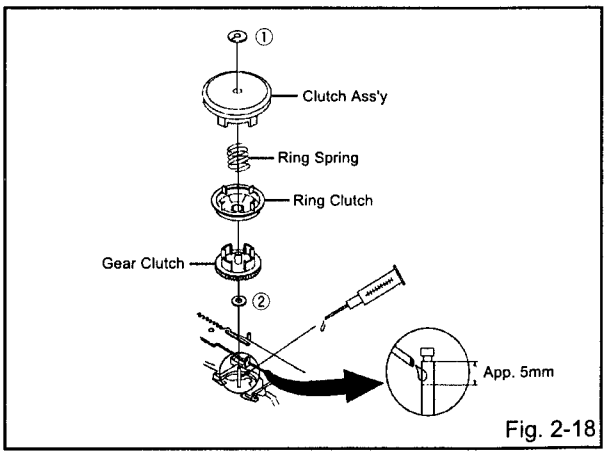


Fig. 2-18

DISASSEMBLY INSTRUCTIONS

2-19: LOADING GEAR S/T ASS'Y (Refer to Fig. 2-19-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Capstan Brake Spring.
3. Slide the Main Rod and remove the Capstan Brake Arm Ass'y.
4. Remove the Main Rod.
5. Remove the Tension Lever.
6. Unlock the 2 supports ② and remove the Clutch Lever.
7. Remove the screw ③.
8. Remove the LED Reflector.
9. Remove the Loading Arm S Ass'y and Loading Arm T Ass'y.
10. Remove the Loading Gear S and Loading Gear T.
11. Remove the Loading Gear Spring.

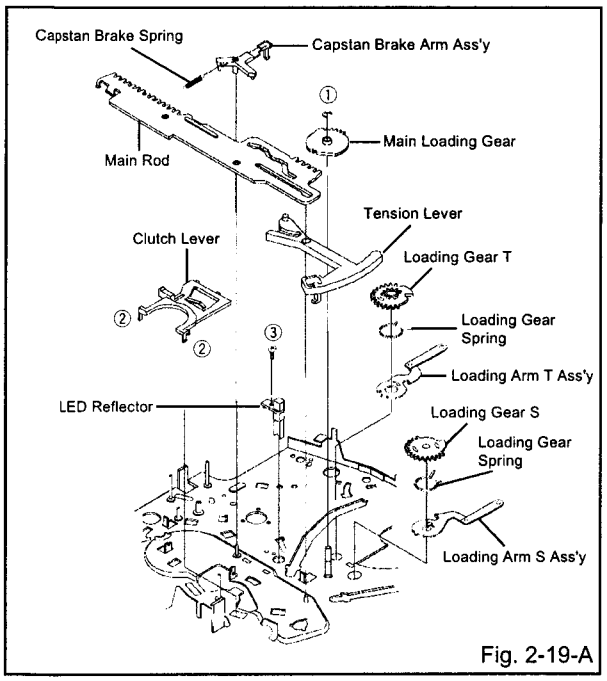


Fig. 2-19-A

NOTE

When you install the Loading Arm S Ass'y, Loading Arm T Ass'y and Main Loading Gear, align each marker. **(Refer to Fig. 2-19-B)**

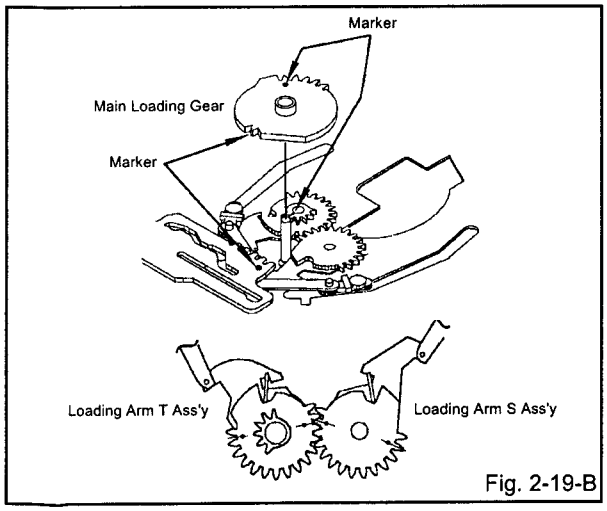


Fig. 2-19-B

2-20: INCLINED S/T ASS'Y (Refer to Fig. 2-20)

1. Unlock the support ① and remove the P4 Cover.
2. Remove the S-S Brake Spring.
3. Unlock the support ② and remove the Loading Gear Holder.
4. Remove the S-S Brake Arm.
5. Remove the Inclined S.
6. Remove the Inclined T.
7. Remove the 2 screws ③, then remove the Guide Roller.

NOTE

Do not touch the roller of Guide Roller.

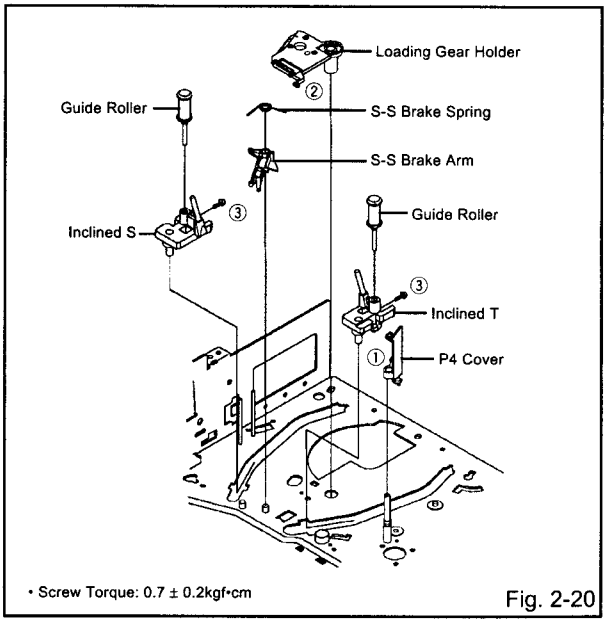


Fig. 2-20

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

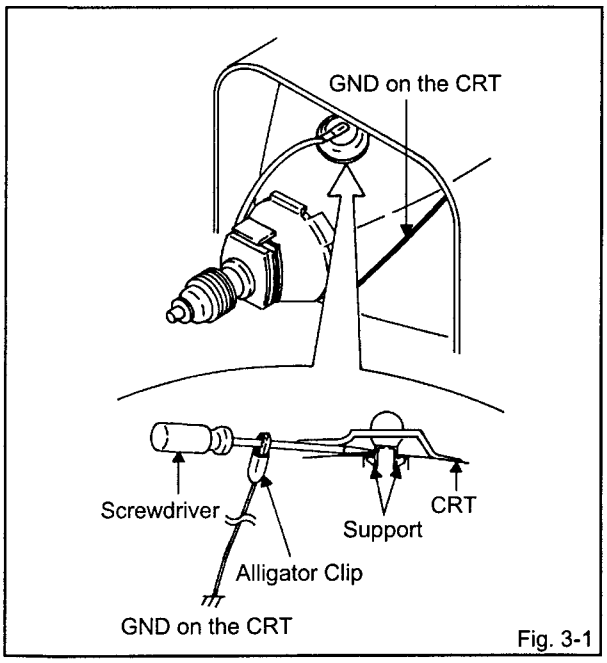


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

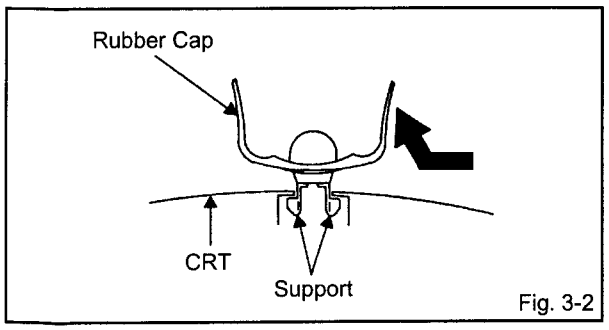


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

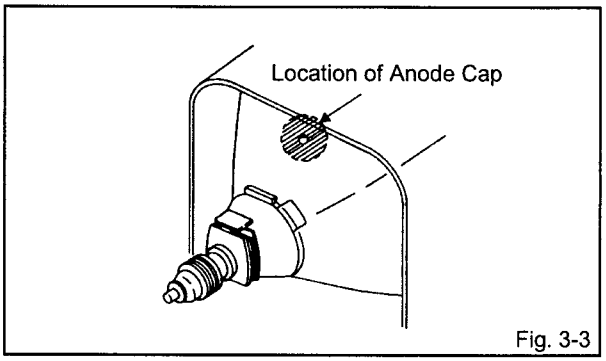


Fig. 3-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

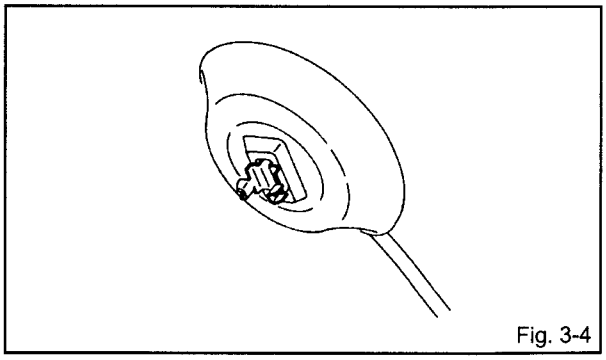


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5.**

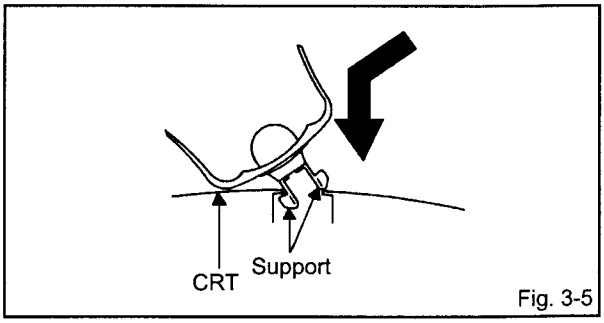


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

KEY TO ABBREVIATIONS

A	A/C	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	BGP	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	C	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	DATA (SY-CE)	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	E	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	F	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flipflop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	GEN	:	Generator
	GND	:	Ground
H	H.P.F	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	IC	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	KIL	:	Killer
L	L	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	M	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	NC	:	Non Connection
	NR	:	Noise Reduction
O	OSC	:	Oscillator
	OPE	:	Operation
P	PB	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	R	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	S. CLK	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play
	STB	:	Serial Strobe
	SW	:	Switch

KEY TO ABBREVIATIONS

S	**SYNC**	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, Unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key for more than 2 seconds.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

Set Key	Remocon Key	Operations
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	Adjusting of the Tracking to the center position. NOTE: Also can be adjusted by pressing the ATR button for more tan 2 seconds during PLAY.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "NOTE FOR THE REPLACING OF MEMORY IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The EOT/BOT/Reel sensor do not work at this moment. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	■	■	
Capstan Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head

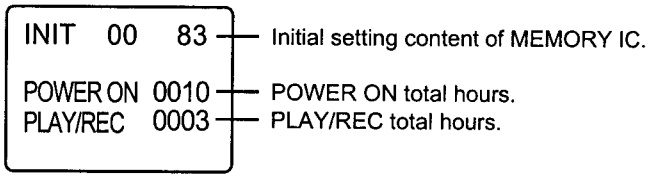
■ : Clean
● : Replace

CONFIRMATION OF USING HOURS

POWER ON total hours and PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

1. Set the VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

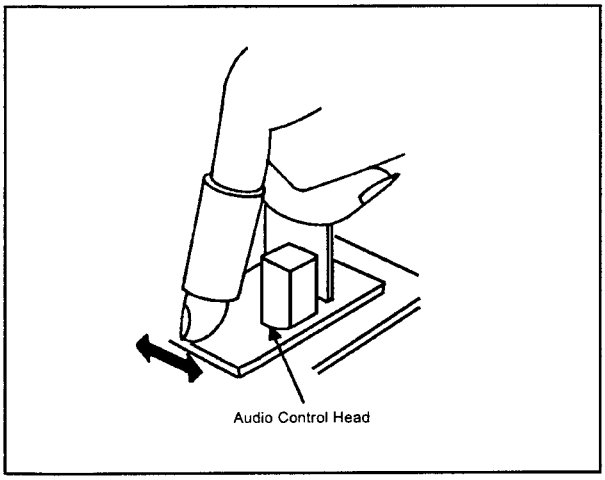
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

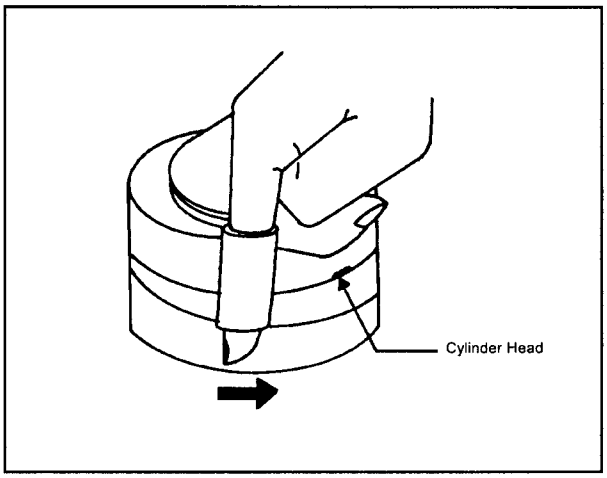
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



NOTE FOR THE REPLACING OF MEMORY IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 30 minutes before Power On or alternatively, discharge backup capacitor.

ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA
00	40	0D	B3	1A	77	27	F0	34	00
01	1E	0E	75	1B	5F	28	01	35	00
02	07	0F	66	1C	05	29	F0	36	00
03	6A	10	A9	1D	00	2A	0E	37	00
04	00	11	40	1E	40	2B	00	38	00
05	00	12	80	1F	F0	2C	01	39	00
06	00	13	85	20	00	2D	01	3A	00
07	0F	14	00	21	00	2E	0B	3B	00
08	C4	15	6A	22	00	2F	01	3C	6C
09	20	16	00	23	00	30	04	3D	2B
0A	02	17	35	24	00	31	00	3E	21
0B	C8	18	A3	25	5F	32	80	3F	15
0C	33	19	68	26	01	33	18		

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

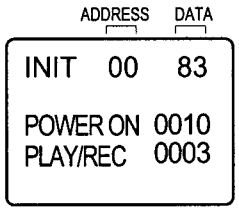
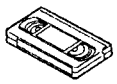
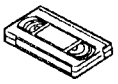
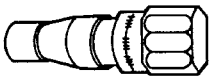
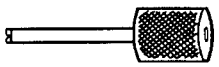
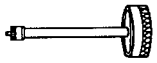
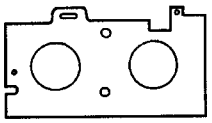
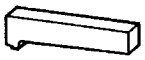
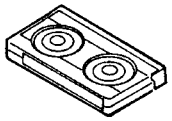
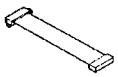
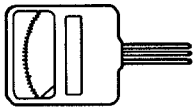


Fig. 1

3. ADDRESS is now selected and should "blink". Using the PLAY or STOP button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using PLAY or STOP button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

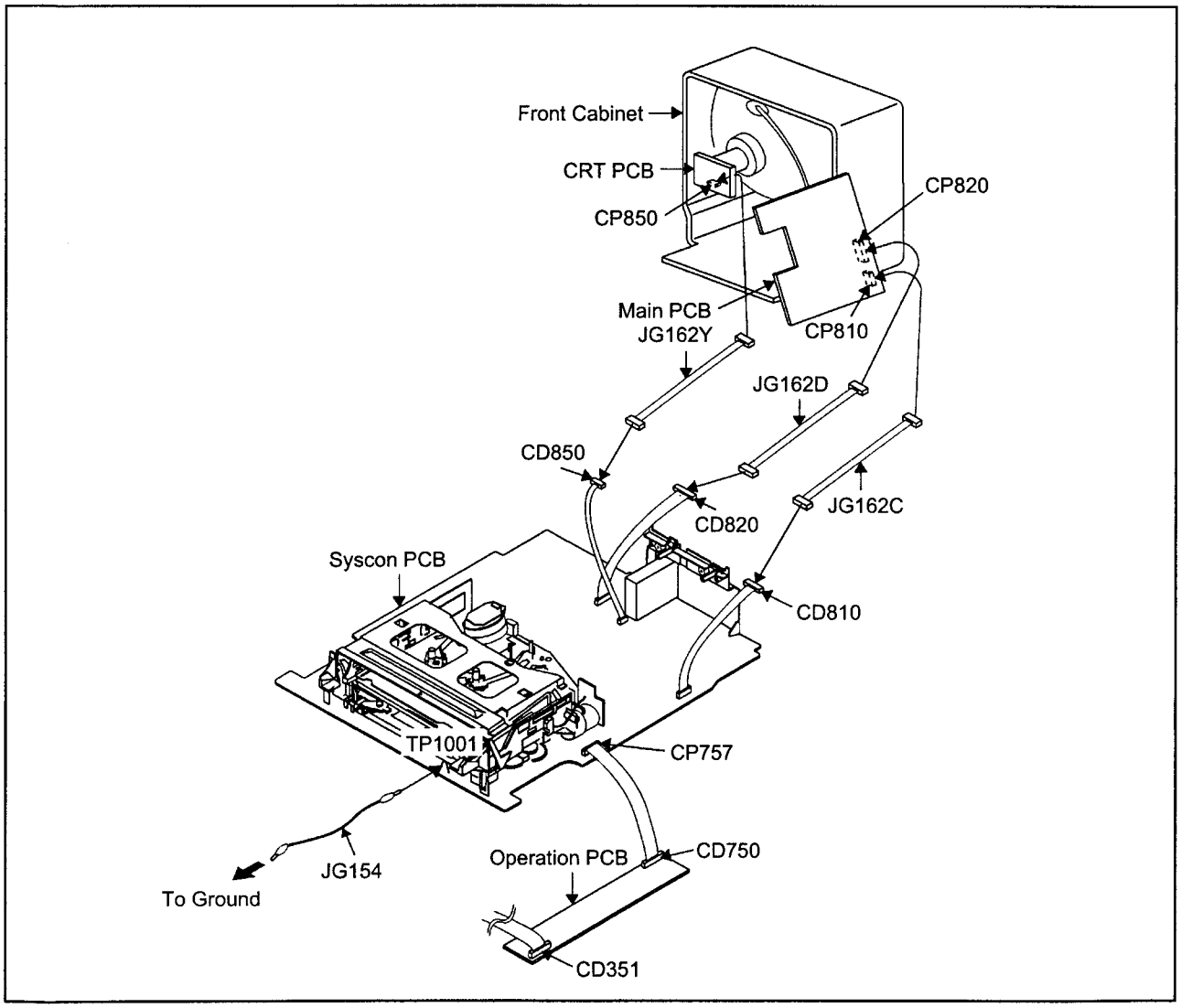
(For 2 head 1 speed model, 4 head model) VHS Alignment Tape JG001E (TTV-P2) JG001F (TTV-P1L) JG001U (VP_1 S-X6 ^{3}) 	**(For 2 head 2 speed model)** VHS Alignment Tape JG001C (TTV-P2) JG001D (TTV-P1L) JG001V (VP_2S-X6 ^{3}) 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 
JG153 X Value Adjustment Screwdriver 	JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 
JG154 Cable Parts No. SJ-G15-400-000 	JG162C Cable (10 Pins) Parts No. SJ-G16-2C0-000 JG162D Cable (11 Pins) Parts No. SJ-G16-2D0-000 JG162Y Cable (5 Pins) Parts No. SJ-G16-2Y0-000 	Tentelometer 	

Part No.	Remarks
JG001E	Stair Steps, 7KHz **(For 2 head 1 speed model, 4 head model)**
JG001F	Color Bar, 1KHz **(For 2 head 1 speed model, 4 head model)**
JG001U	X Value Adjustment **(For 2 head 1 speed model, 4 head model)**
JG001C	Stair Steps, 7KHz **(For 2 head 2 speed model)**
JG001D	Color Bar, 1KHz **(For 2 head 2 speed model)**
JG001V	X Value Adjustment **(For 2 head 2 speed model)**
JG002B	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	Brake Torque (T Reel Ass'y)
JG002F	VSR Torque, Brake Torque (S Reel)
JG005	Guide Roller Adjustment
JG153	X Value Adjustment
JG022/JG024A	Reel Disk Height Adjustment
JG100A	Playback Torque, Back Tension Torque During Playback
JG154	Used to connect the test point of SERVICE and GROUND
JG162C/JG162D	Used to connect the Syscon PCB and Main PCB
JG162Y	Used to connect the Syscon PCB and CRT PCB

PREPARATION FOR SERVICING

Basic Servicing Position (In case of needing to check on all blocks)

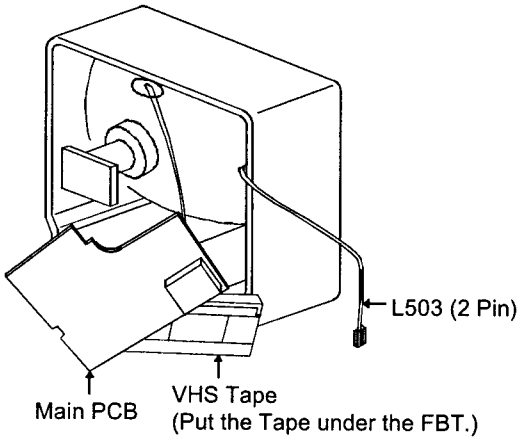
1. Unplug the connector CP351, CP757 and CP302, then remove the TV/VCR Block from the set.
2. Unplug the connector CP810, CP820 and CP850, then remove the Main PCB from the VCR Block.
3. Connect as shown in the below figure using the Service Fixture.
   - Connect the Syscon PCB to the Main PCB with the cable JG162C and JG162D.
   - Connect the Syscon PCB to the CRT PCB with the cable JG162Y.
4. Remove the Operation PCB from the set, then connect it with the Syscon PCB.
   If necessary, connect CP351. (Front A/V Jack Input Terminal)
5. Short circuit between **TP1001** and **GND** with the cable JG154.
   (The EOT, BOT and Reel Sensor do not work at this moment.)
6. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.



PREPARATION FOR SERVICING

Servicing Position for Main PCB (In case of needing to check on Main PCB)

- It's possible to get the Servicing Position without the extension Jig if you arrange the unit as shown below.
  (But L503 connection can not be done, Degauss circuit will not operate.)



- Be careful for the short circuit.

VCR TEST TAPE INTERCHANGEABILITY TABLE

There are two types of the new alignment tape CH-1B (for NTSC) and CH-2 (for PAL). On each tape four signals (1) - (4) are recorded for the times and in the order shown below.

(1) : 8min. ---> (2) : 2min. ---> (3) : 5min. ---> (4) : 5min.

The TTV-MP1 (for M-PAL), TTV-MS1 (for MESECAM) and TTV-S1 (for SECAM) alignment tapes have the same contents as the previous tapes.

Method	Now in use TYPE		New TYPE		Application
	Model	Contents*1	Model	Contents*1	
NTSC	TTV-N1	NTSC, Color, 1kHz, SP	CH-1B(2)	NTSC, Stairsteps, 1kHz, SP	PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-N1E	NTSC, Color, 1kHz, EP	CH-1B(4) *2	NTSC, Color, 1kHz, EP	Switching position ADJ.
	TTV-N2	NTSC, Stairsteps, 7kHz, SP	CH-1B(1)	NTSC, Stairsteps, 7kHz, SP	Head ACE Azimuth ADJ.
	TTV-N12 (SCV-1998)	NTSC, Color, 1kHz, SP	CH-1B(4)	NTSC, Color, 1kHz, EP	FM envelope ADJ. X-Value ADJ.
	TTV-N7A	NTSC, Stairsteps, 1kHz, SP, HiFi 400Hz	CH-1B(3)	NTSC, Color, No sound SP, HiFi 400Hz	HiFi Audio PB Level ADJ.
PAL	TTV-P1	PAL, Color, 1kHz, SP	CH-2(2) *3	PAL, Stairsteps, 1kHz, SP	Switching position ADJ. PB-Y Level/General electrical ADJ. Head ACE Height/Tilt ADJ.
	TTV-P1L	PAL, Color, 1kHz, LP	CH-2(4)	PAL, Color, 1kHz, LP	Switching position. (LP Model) FM Envelope ADJ. (LP Model) X-Value ADJ. (LP Model)
	TTV-P2	PAL, Stairsteps, 6kHz, SP	CH-2(1)	PAL, Stairsteps, 6kHz, SP	Head ACE Azimuth ADJ. FM Envelope ADJ. (SP Model) X-Value ADJ. (SP Model)
	TTV-P7	PAL, Stairsteps, 1kHZ, SP, HiFi, 1kHz	CH-2(3)	PAL, Color, No sound SP, HiFi 400Hz	HiFi Audio PB Level ADJ.
	TTV-P16	PAL, Color, 400Hz, SP, HiFi 1kHz	No Changed.		FM Filter ADJ.

*1. Described in the order of color format. Video signal. Linear audio. Tape speed and Hi-Fi audio.
*2. Use CH-1B (1) - (3) with models used exclusively in the SP mode.
*3. Use CH-2 (3) and (4) when it is necessary to observe the chroma signal.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Cassette Holder, short circuit between **TP1001** and **GND**. **(Refer to ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE)** In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that "A" of the reel disk is lower than "B" of the reel disk height adjustment jig **(JG024A)** , and is higher than "C". If it is not enough height, adjust to 10(+0.2, -0) mm with the height adjustment washer.
4. Adjust the other reel in the same way.

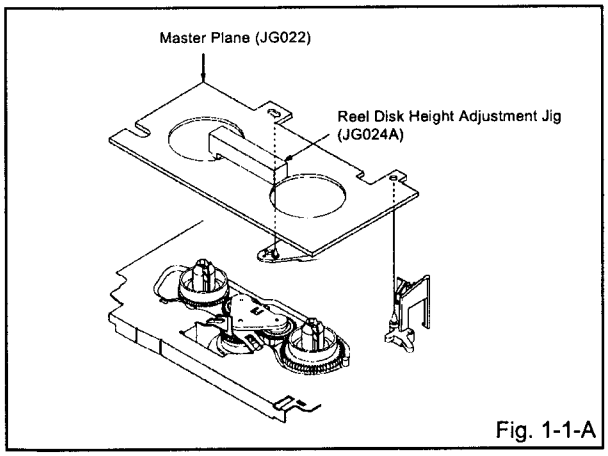


Fig. 1-1-A

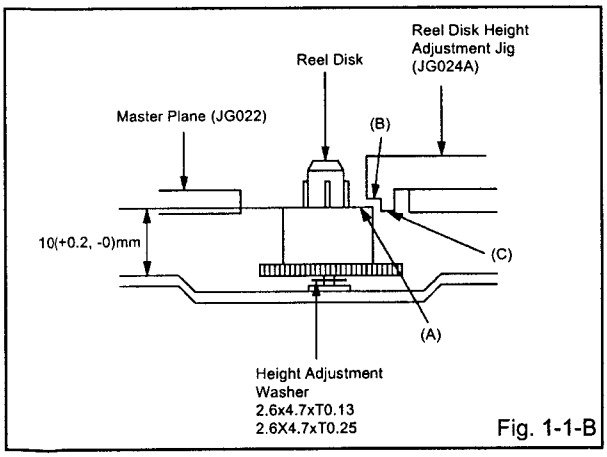


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the Tension Adjust until the edge of the Tension Arm is positioning within 0.5mm range from the standard line center of Main Chassis.
   After this adjustment, confirm that the cut position is located in "A" area as shown in **Fig. 1-2-B**. If it is located in "B" area, adjust again.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

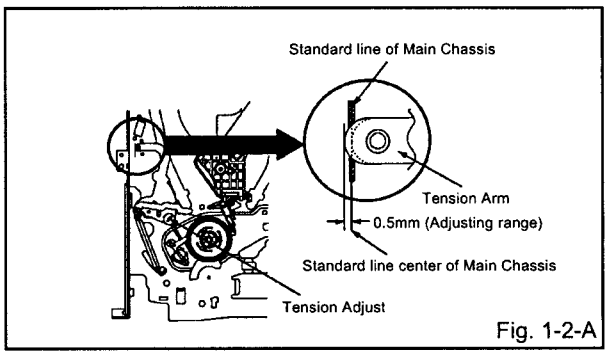


Fig. 1-2-A

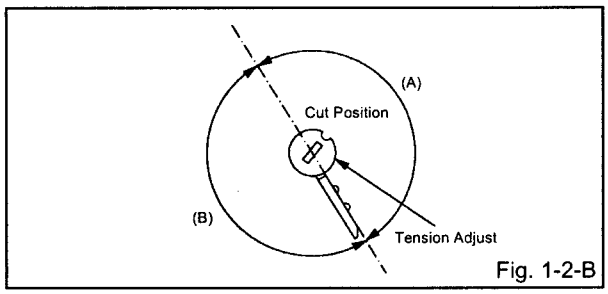


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(JG100A)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(JG100A)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 60~100gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

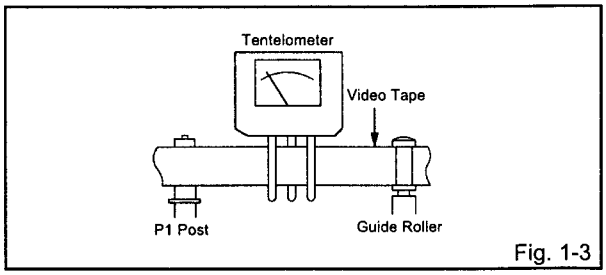


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Operate within 4~5 seconds after the reel disk begins to turn.
2. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Rewind mode. **(Refer to Fig.1-4)**
3. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 70~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4)**

1. Set to the STOP mode.
2. Move the Idler Ass'y from the T Reel Ass'y.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 35~60gf•cm.

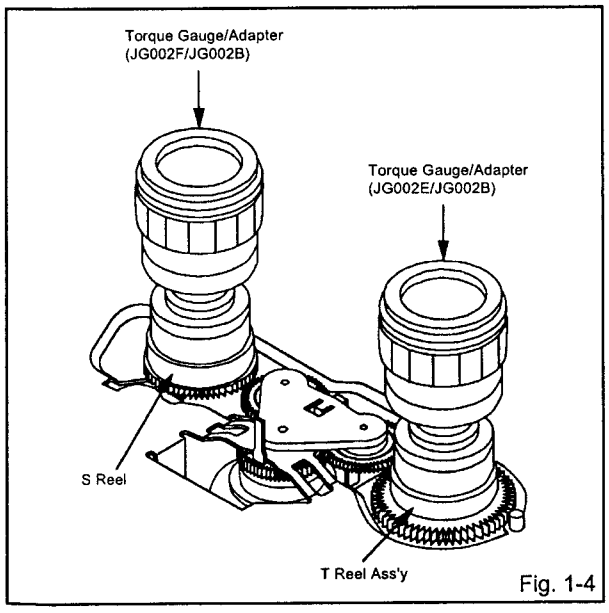


Fig. 1-4

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	T Brake Spring/Tension Spring

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape **(JG001C or JG001E)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
2. Connect CH-1 of the oscilloscope to **TP4002 (Envelope)** and CH-2 to **TP4001 (SW Pulse)**.
3. Press and hold the TRACKING-AUTO button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
5. When observing the envelope, adjust the Adjusting Driver **(JG005)** slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. **(Refer to the ELECTRICAL ADJUSTMENTS)**

NOTE

After adjustment, confirm and adjust A/C head. **(Refer to item 2-2)**

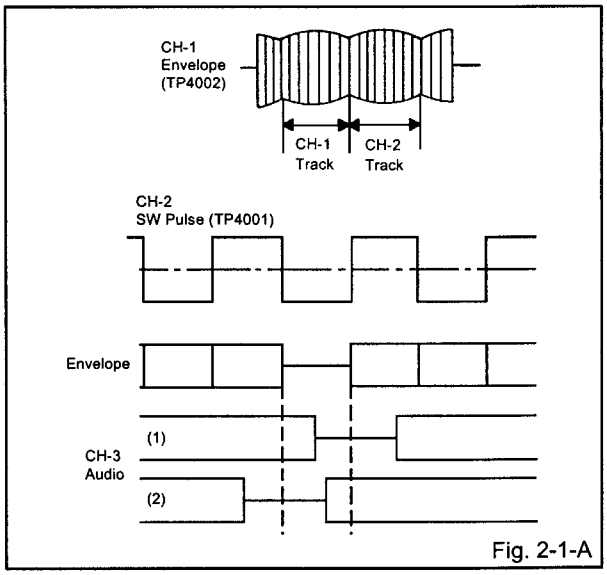


Fig. 2-1-A

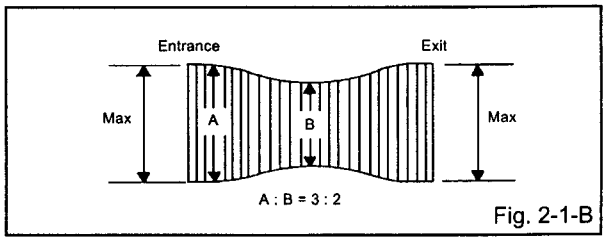


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape **(JG001C or JG001E)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

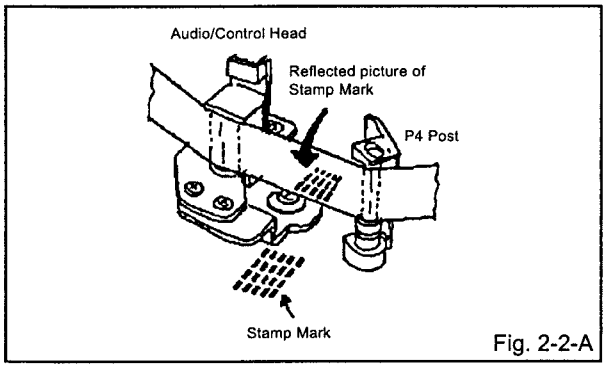


Fig. 2-2-A

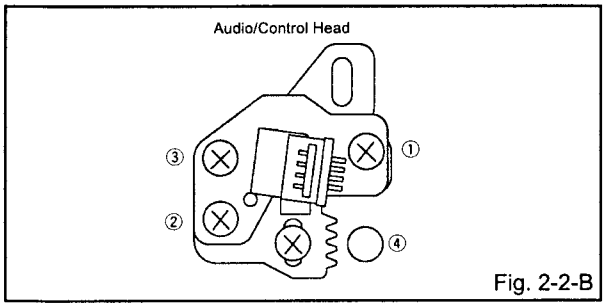


Fig. 2-2-B

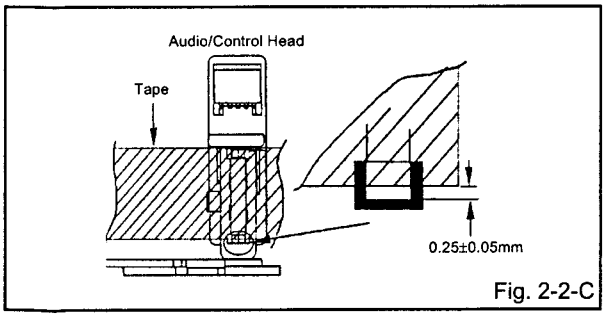


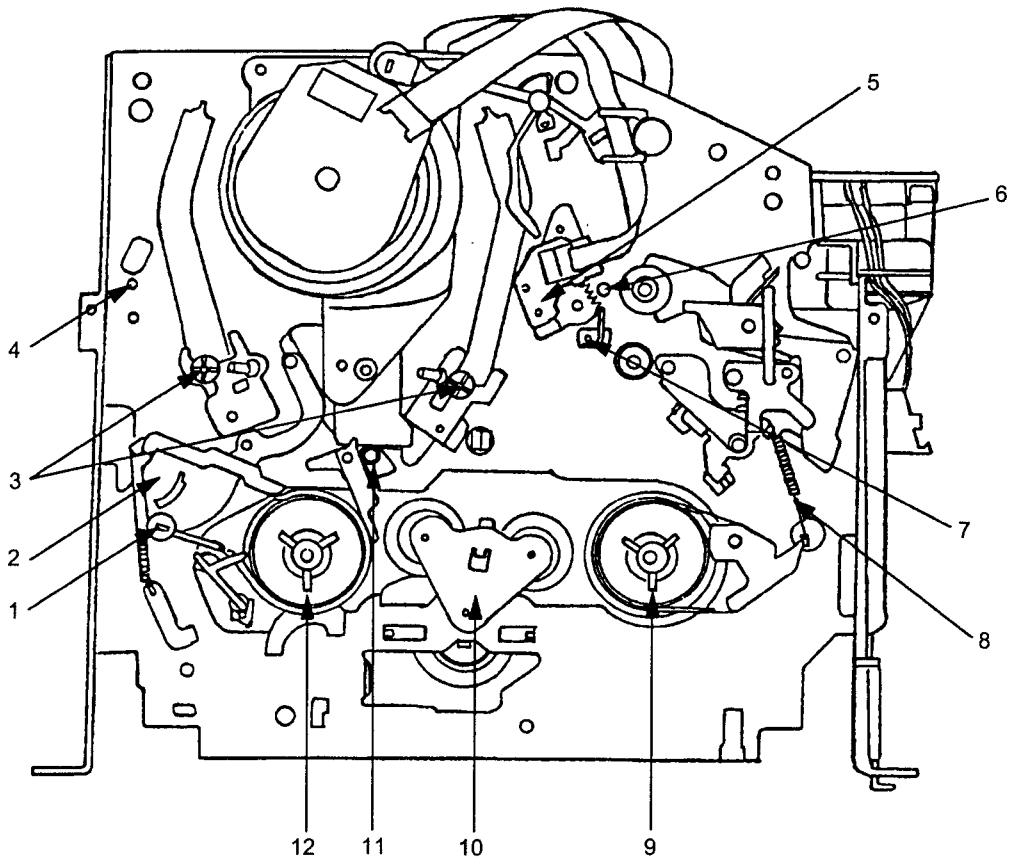
Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP4002**, CH-2 to **TP4001** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape **(JG001U or JG001V)**. **(Refer to SERVICING FIXTURE AND TOOLS)**
7. Press and hold the TRACKING-AUTO button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-1-A**.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Adjust
2. Tension Arm
3. Guide Roller
4. P1 Post
5. Audio/Control Head
6. X value adjustment driver hole
7. P4 Post
8. T Brake Spring
9. T Reel Ass'y
10. Idler Ass'y
11. S-S Brake Spring
12. S Reel

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease **(G746)**.
(To prevent the damage to IC's and transistors.)

On-Screen Display Adjustment

1. Unplug the AC plug for more than 30 minutes to set the clock to the non-setting state. (To release the Back-Up immediately, take the short circuit between **C1003** and **GND** at the Power Off.) Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the channel button **(9)** on the remote control for more than 2 seconds to display adjustment mode on the screen as shown in **Fig. 1-1**.

NOTE

Use the channel buttons **(1-8)** on the remote control to select the options shown in **Fig. 1-1.**
Press the channel button **(0)** or MENU button on the remote control to end the adjustments.

1. H/V
2. AKB
3. COLOR TEMP
4. PICTURE
5. OTHERS
6. TEST PATTERN
7.
8. (VOL TEST) 0. END

"The adjustment items 3, 6 and 8 are not used for this model."

Fig. 1-1

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to **TP4001** and CH-2 to **pin 7 of CP603**.
2. Playback the alignment tape. **(JG001F)**
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button **(3)** on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button **(4)** on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes 6.5 ± 0.5H.
(Refer to Fig. 2-1-A, B)
7. Press the Tracking Auto button.

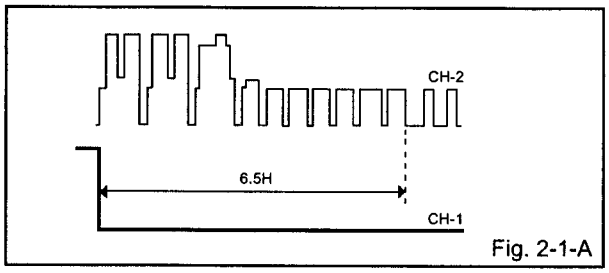


Fig. 2-1-A

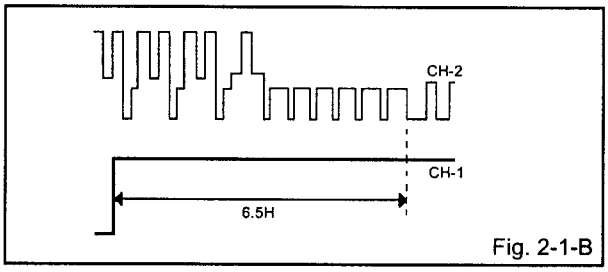


Fig. 2-1-B

2-2: VCO

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (39.5MHz) to **pin 11 of TU601** through 100 Ω resistor.
3. Connect the digital voltmeter between the **pin 47 of IC601**.
4. Adjust the **L608** until the digital voltmeter is 3.8 ± 0.05V.

2-3: RF AGC

1. Receive the UHF (80dB).
2. Connect the digital voltmeter between the **pin 5 of CP603** and the **pin 1 (GND) of CP603**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
4. Press the channel button **(1)** on the remote control to select "RF AGC DELAY".
5. Press the PLAY or STOP button on the remote control until the digital voltmeter is 2.5 ± 0.05V.

1. RF AGC DELAY
2. VIDEO LEVEL
3. FM LEVEL
4. OSD H
5. CUT OFF
6. (CHROMA VOL)
7.
8. 0. RETURN

"The adjustment items 2, 3 and 6 are not used for this model."

Fig. 2-2

ELECTRICAL ADJUSTMENTS

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Connect the digital voltmeter to **TP401**.
2. Set condition is AV MODE without signal.
3. Adjust the **VR502** until the DC voltage is 135 ± 0.5V.

2-5: CUT OFF

1. Place the set with Aging Test for more than 15 minutes.
2. Set condition is AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
5. Press the channel button **(5)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

2-6: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(2)** on the remote control to select "AKB". The **Fig. 2-3** appears on the display.
5. Press the channel button **(2)** on the remote control to select the "R.BIAS".
6. Using the PLAY or STOP button on the remote control, adjust the R.BIAS.
7. Press the CH. UP/DOWN button on the remote control to select the "G.BIAS", "B.BIAS", "R.DRIVE", "G.DRIVE" or "B.DRIVE".
8. Using the PLAY or STOP button on the remote control, adjust the G.BIAS, B.BIAS, R.DRIVE, G.DRIVE or B.DRIVE.
9. Perform the above adjustments 7 and 8 until the white color is looked like a white.

1. AKB AUTO
2. R.BIAS
3. G.BIAS
4. B.BIAS
5. R.DRIVE
6. G.DRIVE
7. B.DRIVE
8. AGC AUTO 0. RETURN

"The adjustment items 1 and 8 are not used for this model."

Fig. 2-3

2-7: FOCUS

1. Receive a broadcast.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-8: HORIZONTAL PHASE

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(1)** on the remote control to select "H. PHASE".
5. Press the PLAY or STOP button on the remote control until the vertical line becomes fit to the notch of the shadow mask.

1. H. PHASE
2. H. BLK
3. V. SIZE 50/60
4. V. POSI 50/60
5. V. LIN 50/60
6. V. SC 50/60
7. V. COMP
8. (H FREQ) 0. RETURN

"The adjustment item 8 is not used for this model."

Fig. 2-4

2-9: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-8.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(3)** on the remote control to select "V. SIZE 50/60".
5. Press the PLAY or STOP button on the remote control until the rectangle on the center of the screen becomes square.
6. Receive a broadcast and check if the picture is normal.
7. Receive the cross hatch signal of NTSC. (Audio Video Input)
8. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

2-10: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-9.

1. Receive the cross hatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(5)** on the remote control to select "V. LIN 50/60".
5. Press the PLAY or STOP button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

ELECTRICAL ADJUSTMENTS

2-11: VERTICAL POSITION

NOTE: Adjust after performing adjustments in section 2-10.

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
4. Press the channel button **(4)** on the remote control to select "V. POSI 50/60".
5. Press the PLAY or STOP button on the remote control until the horizontal line becomes fit to the notch of the shadow mask.
6. Receive the center cross signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

2-12: OSD HORIZONTAL

1. Using the remote control, set the brightness and contrast to normal position.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(5)** on the remote control to select "OTHERS". The **Fig. 2-2** appears on the display.
3. Press the channel button **(4)** on the remote control to select "OSD H".
4. Press the PLAY or STOP button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-5)**

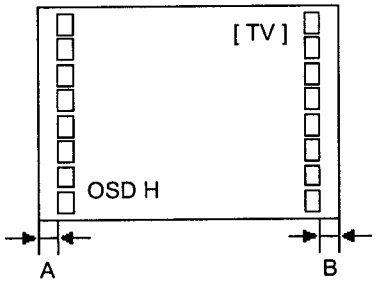


Fig. 2-5

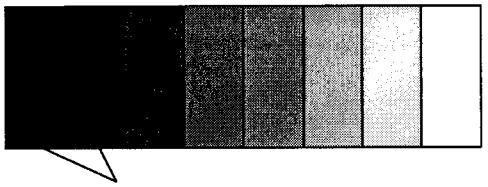
2-13: SUB BRIGHTNESS

1. Receive more than 8 steps monochrome pattern (80dB). (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
4. Press the channel button **(1)** on the remote control to select "BRIGHT".
5. Press the PLAY or STOP button on the remote control until the second scale from left end is starting to glitter. **(Refer to Fig. 2-7)**
6. Receive more than 8 steps monochrome pattern. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

1. BRIGHT
2. CONTRAST
3. COLOR
4. TINT
5. SHARPNESS
6. OSD CONT
7.
8. 0. RETURN

"The adjustment item 4 is not used for this model."

Fig. 2-6



No brilliance on the left end scale.
The next scale have a slight brilliance.

Fig. 2-7

2-14: SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast and color to normal position.
3. Connect the synchro scope to **TP801**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
5. Press the channel button **(3)** on the remote control to select "COLOR".
6. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
7. Press the PLAY or STOP button on the remote control until the red color level is adjusted to 95% of the white level. **(Refer to Fig. 2-8)**
8. Receive the color bar pattern. (Audio Video Input)
9. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~7.

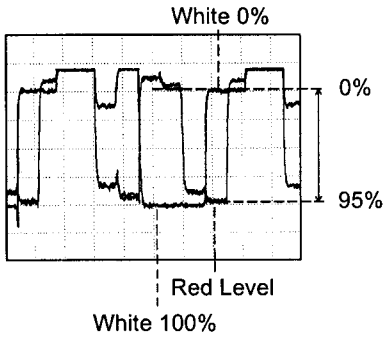


Fig. 2-8

ELECTRICAL ADJUSTMENTS

2-15: SUB CONTRAST

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
2. Press the channel button **(2)** on the remote control to select "CONTRAST".
3. Press the PLAY or STOP button on the remote control until the contrast step No. becomes "95"
4. Press the AV button on the remote control to set to the AV mode.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
6. Press the channel button **(2)** on the remote control to select "CONTRAST".
7. Press the PLAY or STOP button on the remote control until the contrast step No. becomes "105"

2-16: SUB SHARPNESS

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
2. Press the channel button **(5)** on the remote control to select "SHARPNESS".
3. Check if the step No. of SHARPNESS is "28".
4. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.

2-17: OSD CONTRAST

1. Using the remote control, set the brightness and contrast to normal position.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(4)** on the remote control to select "PICTURE". The **Fig. 2-6** appears on the display.
3. Press the channel button **(6)** on the remote control to select "OSD CONT".
4. Check if the step No. of OSD CONT. is "50".

2-18: H. BLK

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
2. Press the channel button **(2)** on the remote control to select "H. BLK".
3. Switch the R/L by using the ENTER button on the remote control and check if the H. BLK step No. becomes "R2, L4".

2-19: V. S-CORRECTION (V. SC)

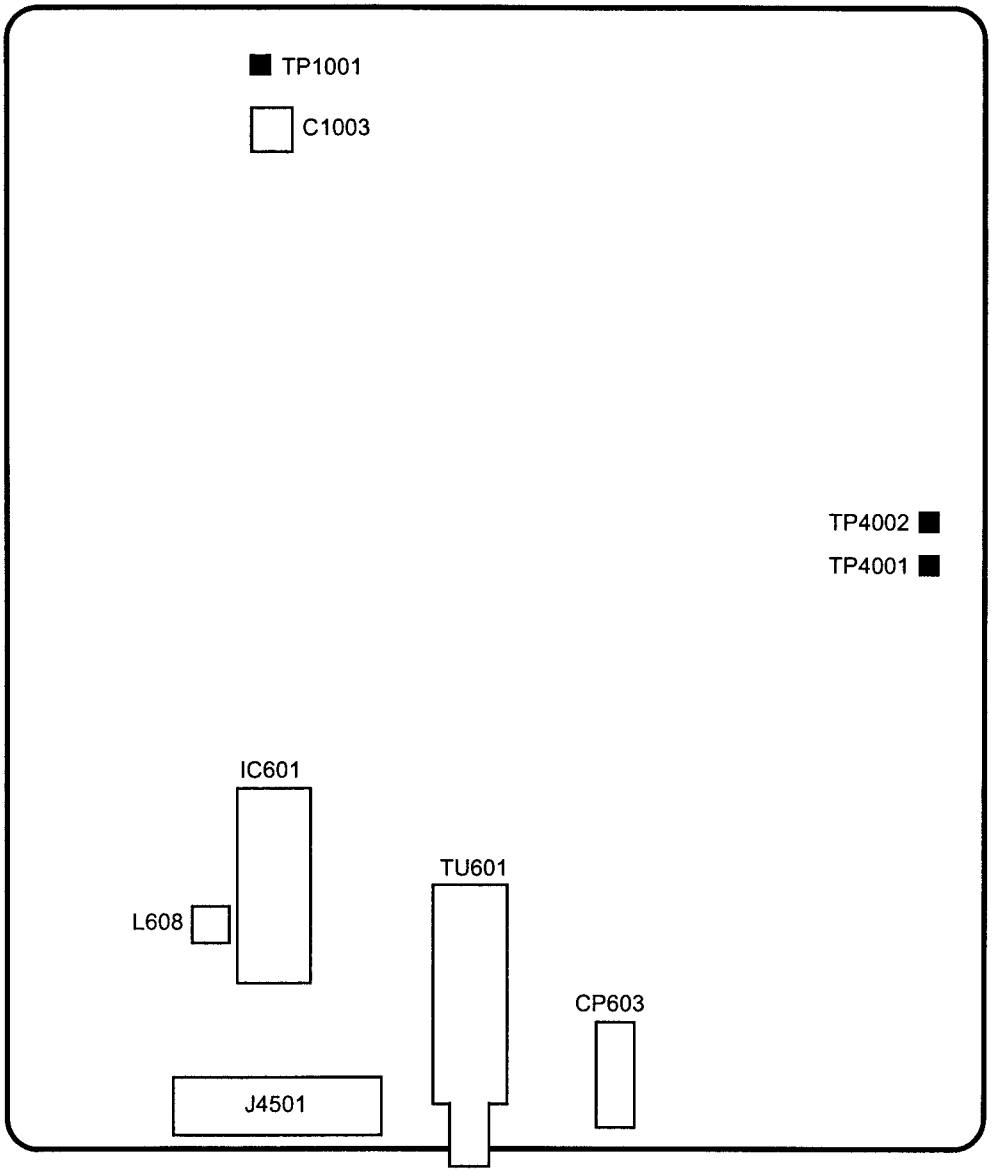
1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
2. Press the channel button **(6)** on the remote control to select "V. SC 50/60".
3. Check if the step No. of V. SC is "0".
4. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.

2-20: V. COMP

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(1)** on the remote control to select "H/V". The **Fig. 2-4** appears on the display.
2. Press the channel button **(7)** on the remote control to select "V. COMP".
3. Check if the step No. of V. COMP is "7".

ELECTRICAL ADJUSTMENTS

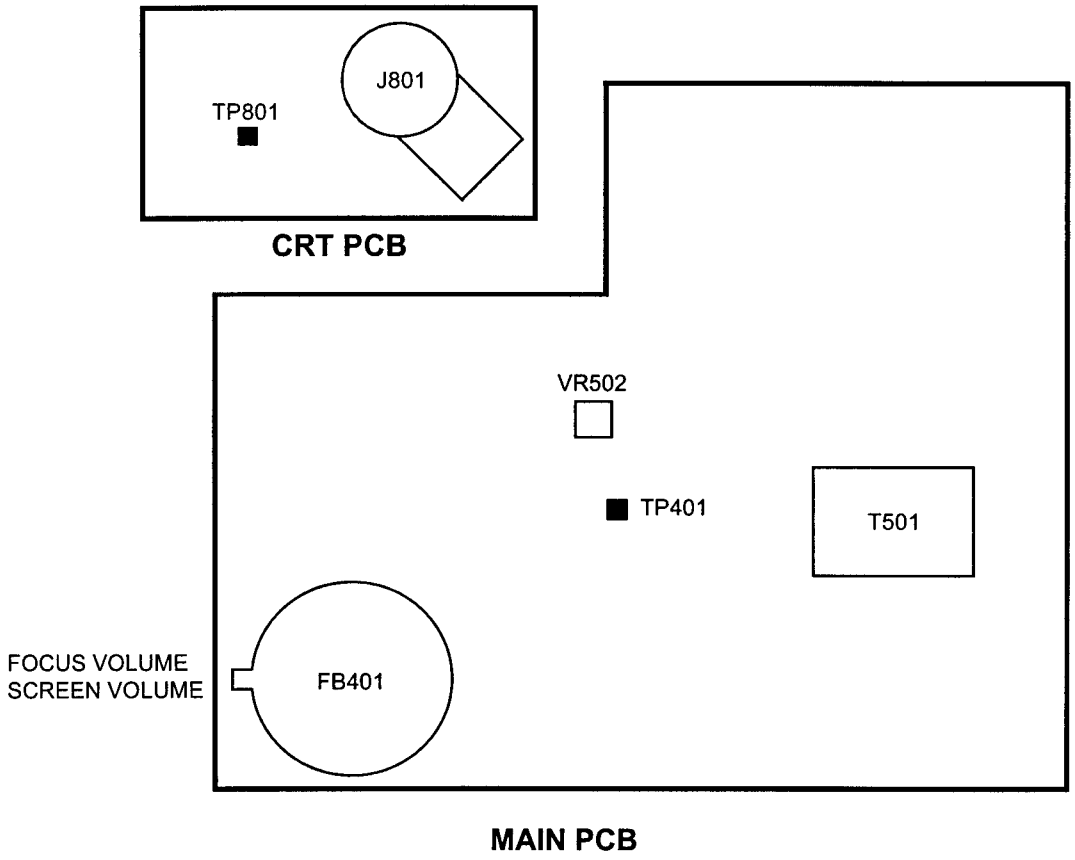
3. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (VCR SECTION)



SYSCON PCB

ELECTRICAL ADJUSTMENTS

(TV SECTION)



ELECTRICAL ADJUSTMENTS

4. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

4-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 4-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

4-2: PURITY

NOTE

Adjust after performing adjustments in section 4-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

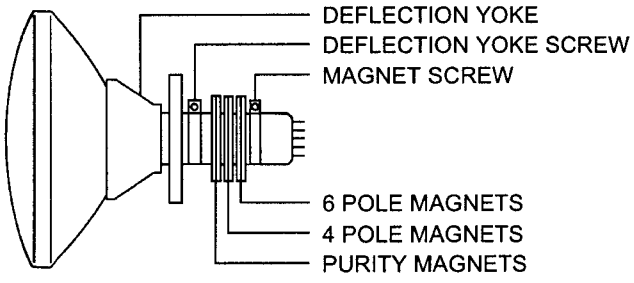


Fig. 4-1

4-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 4-2.

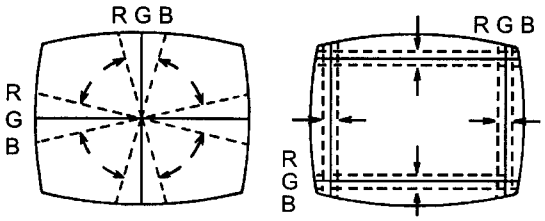
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

4-4: DYNAMIC CONVERGENCE

NOTE

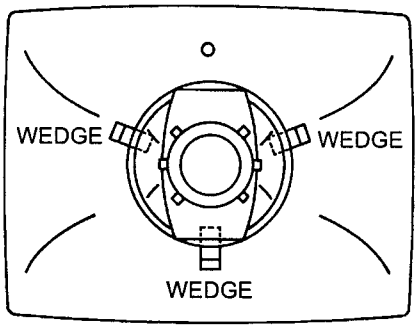
Adjust after performing adjustments in section 4-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 4-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 4-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 4-2-a

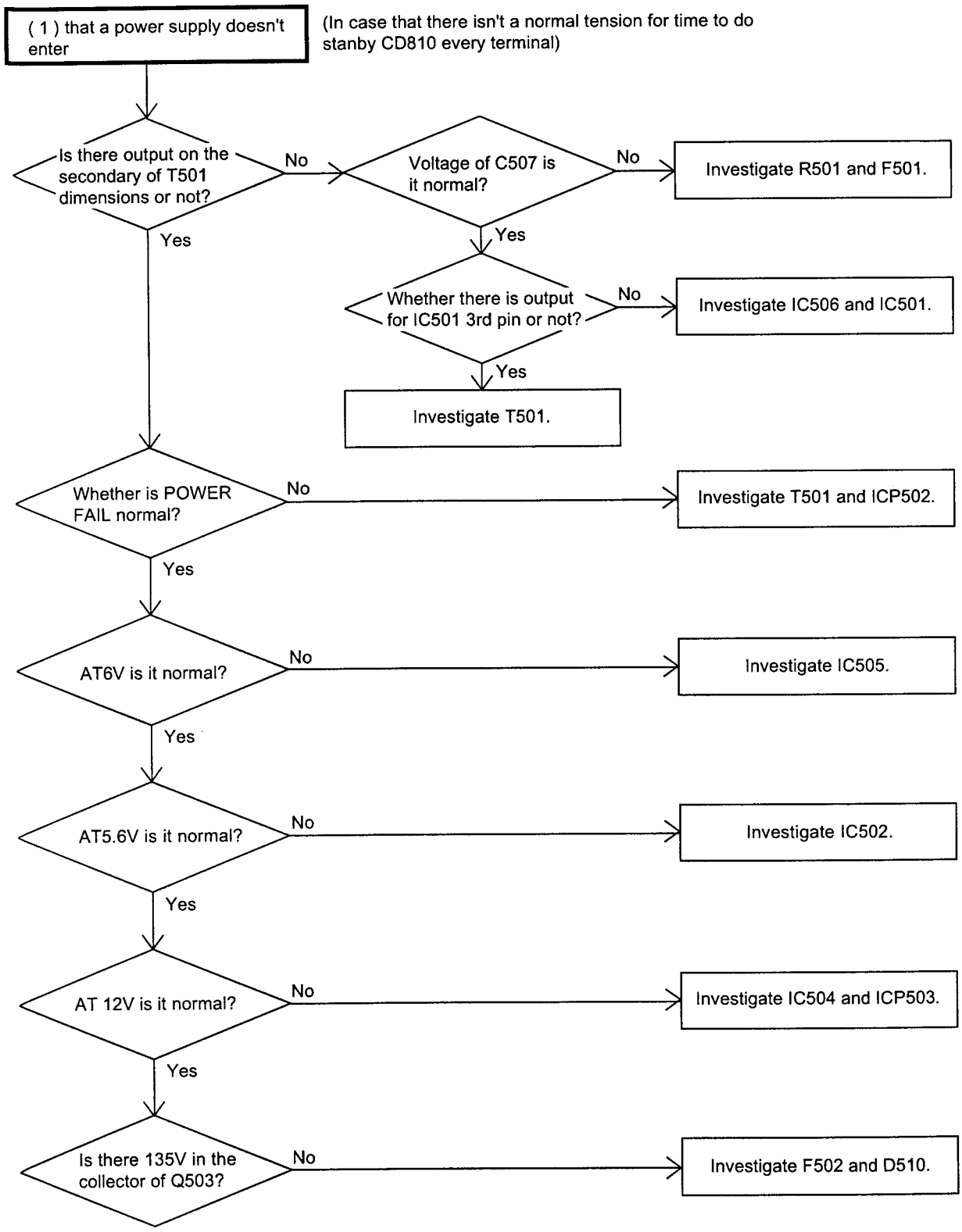


WEDGE POSITION

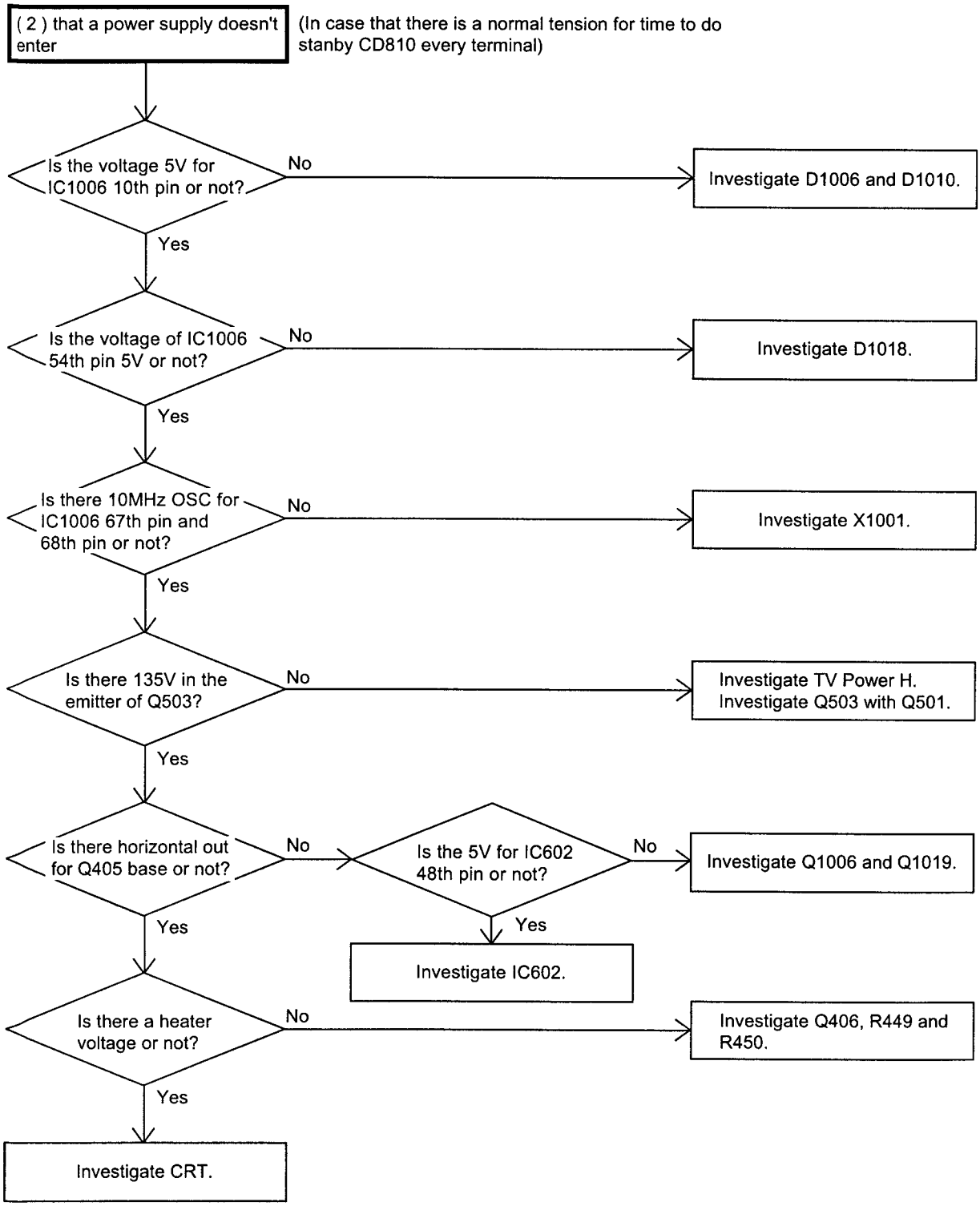
Fig. 4-2-b

TROUBLESHOOTING GUIDE

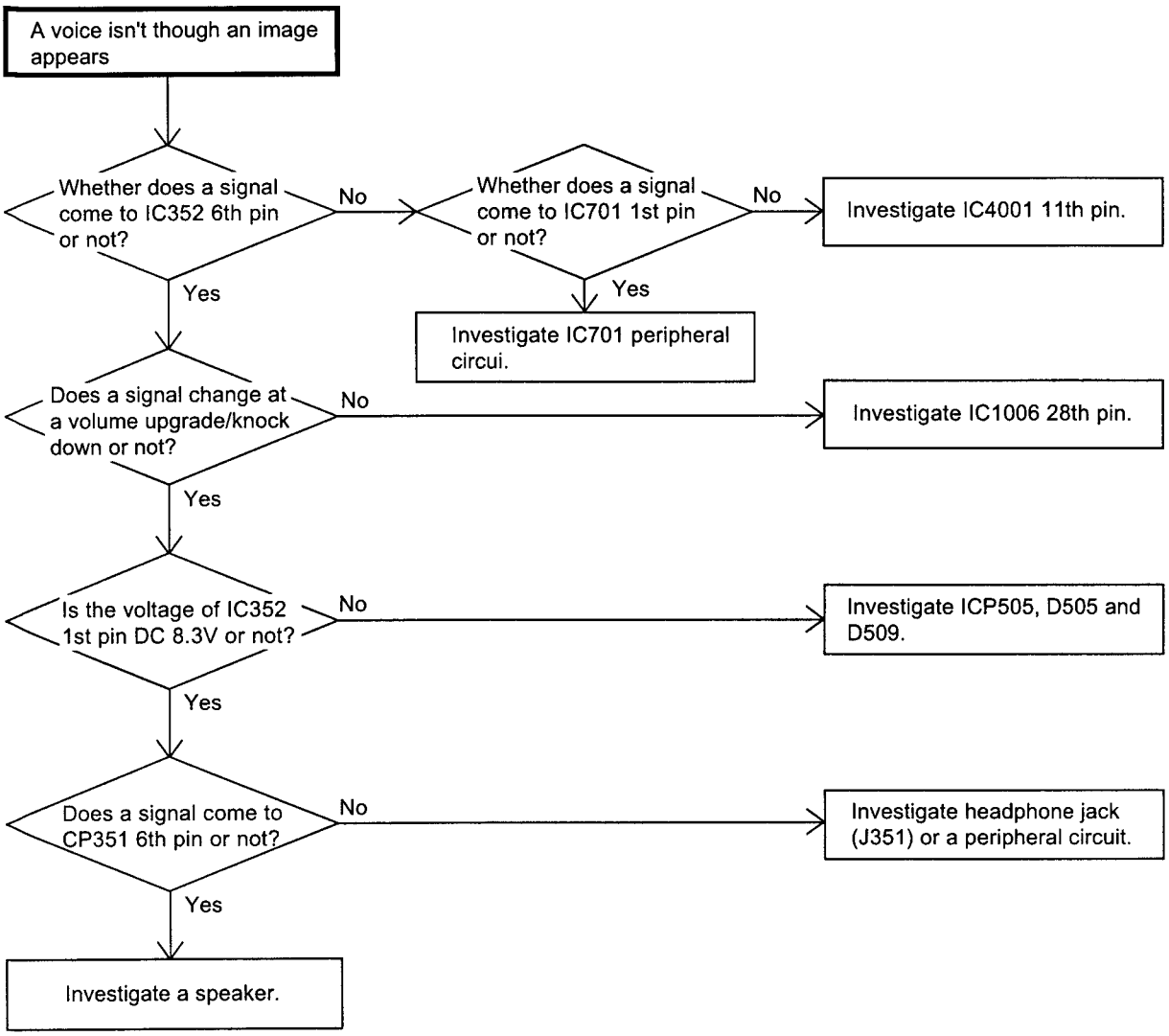
(Television division)



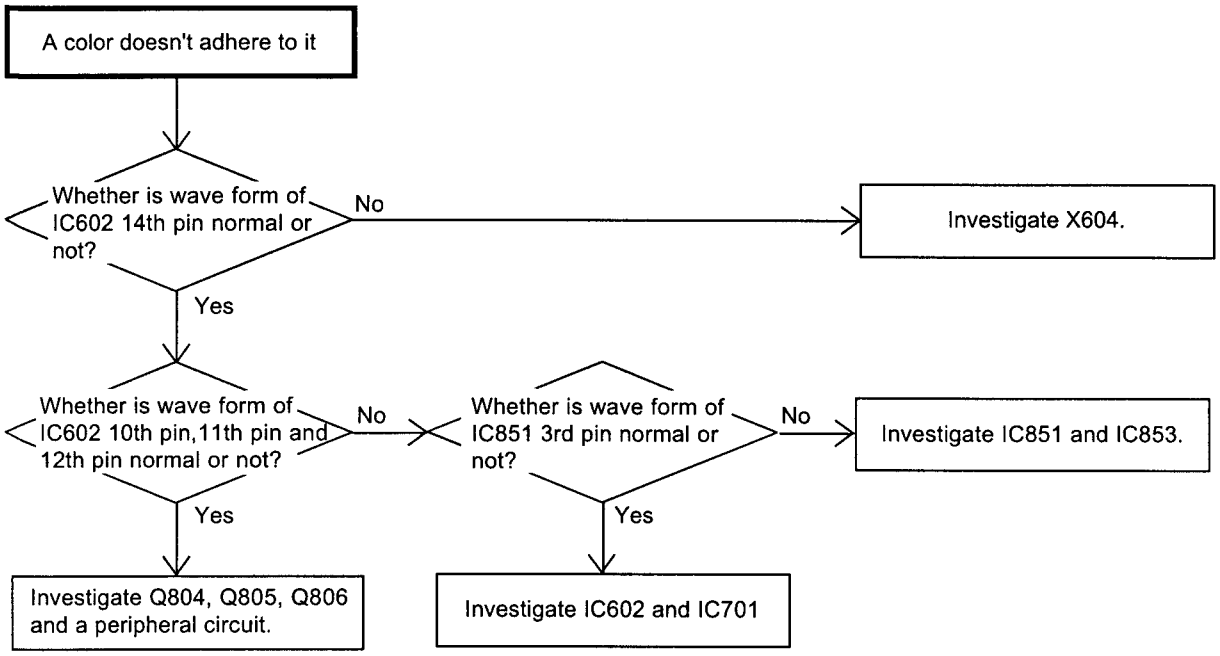
TROUBLESHOOTING GUIDE


(2) that a power supply doesn't enter
(In case that there is a normal tension for time to do stanby CD810 every terminal)
Is the voltage 5V for IC1006 10th pin or not?
No
Investigate D1006 and D1010.
Yes
Is the voltage of IC1006 54th pin 5V or not?
No
Investigate D1018.
Yes
Is there 10MHz OSC for IC1006 67th pin and 68th pin or not?
No
Investigate X1001.
Yes
Is there 135V in the emitter of Q503?
No
Investigate TV Power H.
Investigate Q503 with Q501.
Yes
Is there horizontal out for Q405 base or not?
No
Is the 5V for IC602 48th pin or not?
No
Investigate Q1006 and Q1019.
Yes
Yes
Investigate IC602.
Is there a heater voltage or not?
No
Investigate Q406, R449 and R450.
Yes
Investigate CRT.

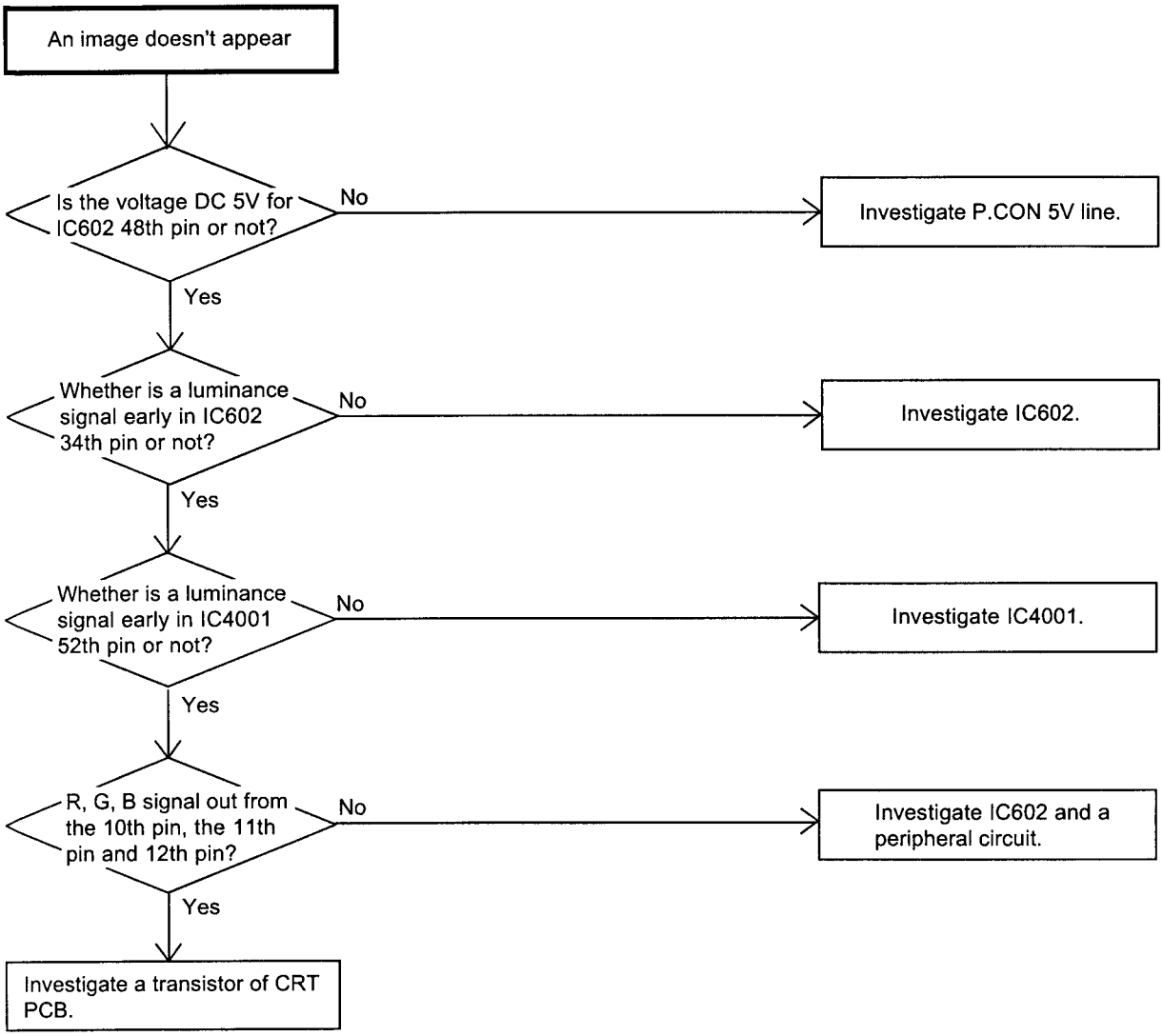
TROUBLESHOOTING GUIDE


A voice isn't though an image appears
Whether does a signal come to IC352 6th pin or not?
No
Whether does a signal come to IC701 1st pin or not?
No
Investigate IC4001 11th pin.
Yes
Yes
Investigate IC701 peripheral circui.
Does a signal change at a volume upgrade/knock down or not?
No
Investigate IC1006 28th pin.
Yes
Is the voltage of IC352 1st pin DC 8.3V or not?
No
Investigate ICP505, D505 and D509.
Yes
Does a signal come to CP351 6th pin or not?
No
Investigate headphone jack (J351) or a peripheral circuit.
Yes
Investigate a speaker.

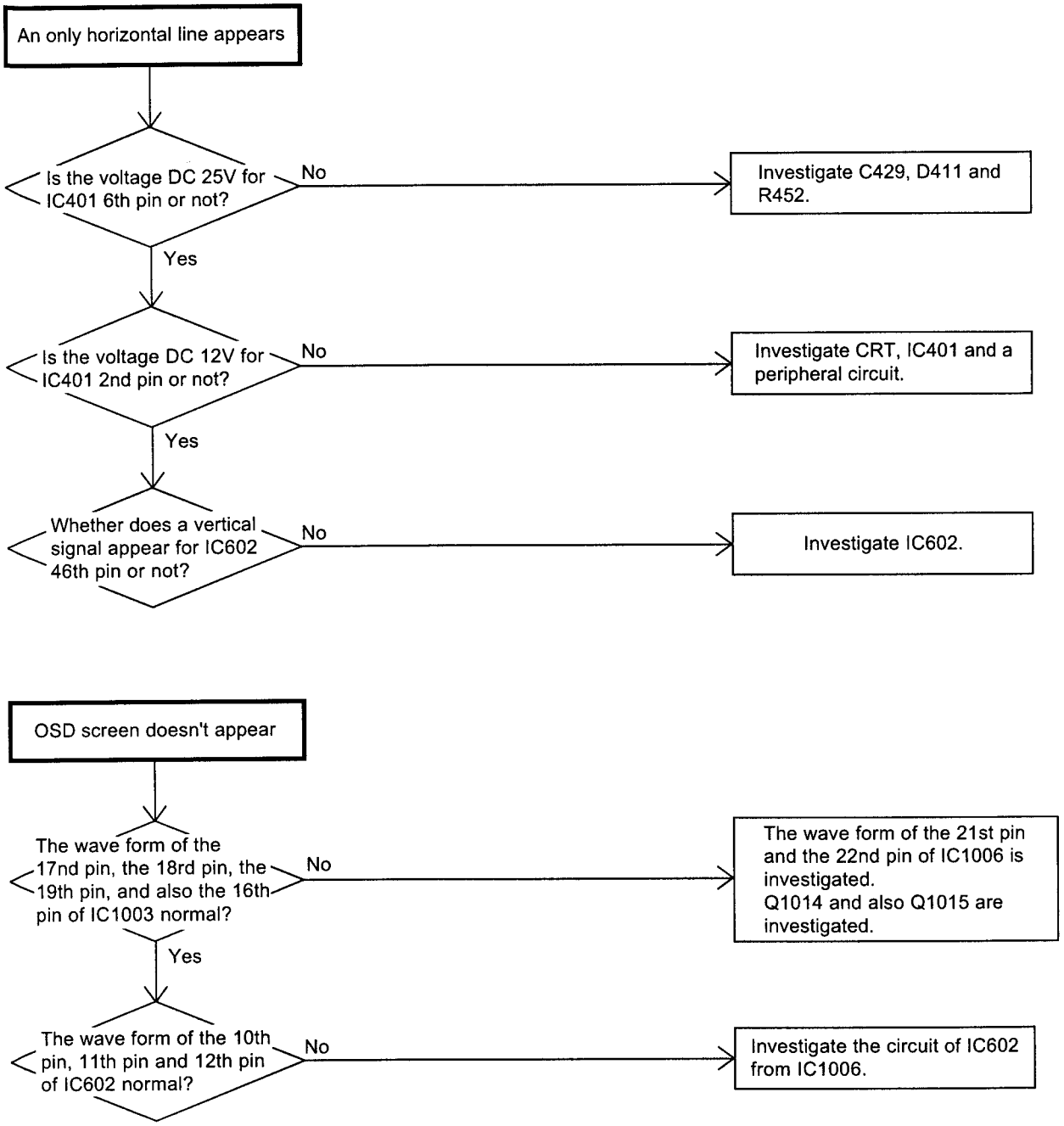
TROUBLESHOOTING GUIDE


A color doesn't adhere to it
Whether is wave form of IC602 14th pin normal or not?
No
Investigate X604.
Yes
Whether is wave form of IC602 10th pin,11th pin and 12th pin normal or not?
No
Whether is wave form of IC851 3rd pin normal or not?
No
Investigate IC851 and IC853.
Yes
Yes
Investigate Q804, Q805, Q806 and a peripheral circuit.
Investigate IC602 and IC701

TROUBLESHOOTING GUIDE

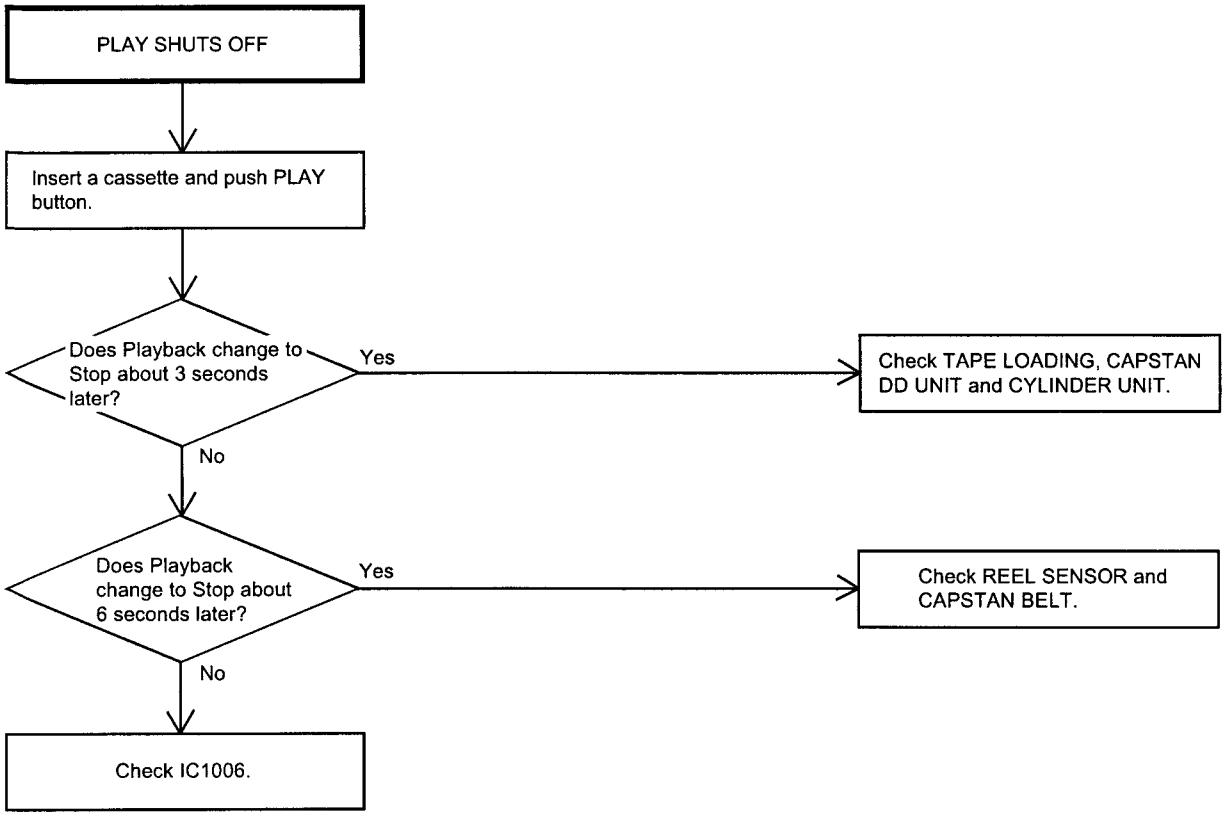

An image doesn't appear
Is the voltage DC 5V for IC602 48th pin or not?
No
Investigate P.CON 5V line.
Yes
Whether is a luminance signal early in IC602 34th pin or not?
No
Investigate IC602.
Yes
Whether is a luminance signal early in IC4001 52th pin or not?
No
Investigate IC4001.
Yes
R, G, B signal out from the 10th pin, the 11th pin and 12th pin?
No
Investigate IC602 and a peripheral circuit.
Yes
Investigate a transistor of CRT PCB.

TROUBLESHOOTING GUIDE

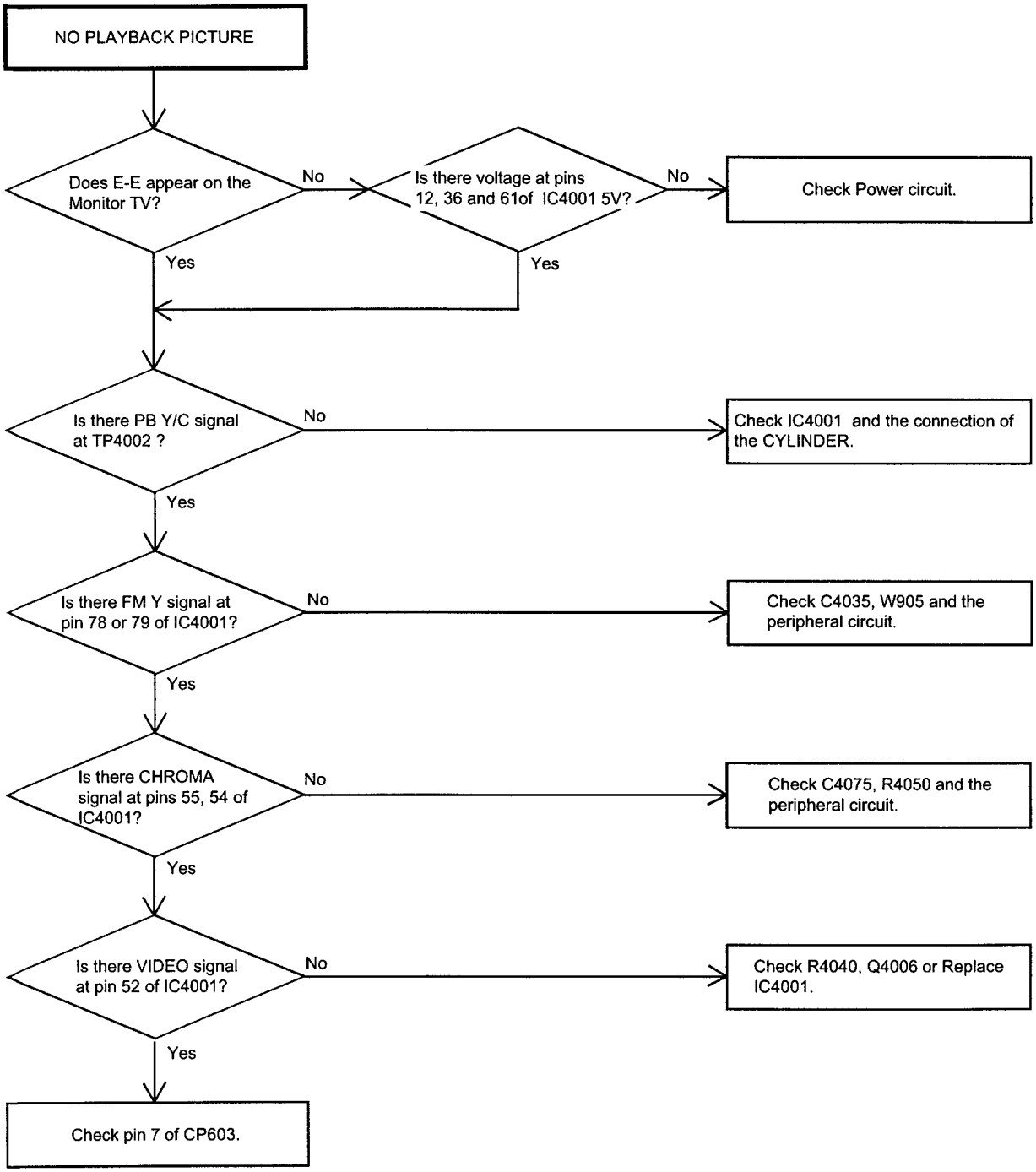

An only horizontal line appears
Is the voltage DC 25V for IC401 6th pin or not?
No
Investigate C429, D411 and R452.
Yes
Is the voltage DC 12V for IC401 2nd pin or not?
No
Investigate CRT, IC401 and a peripheral circuit.
Yes
Whether does a vertical signal appear for IC602 46th pin or not?
No
Investigate IC602.
OSD screen doesn't appear
The wave form of the 17nd pin, the 18rd pin, the 19th pin, and also the 16th pin of IC1003 normal?
No
The wave form of the 21st pin and the 22nd pin of IC1006 is investigated.
Q1014 and also Q1015 are investigated.
Yes
The wave form of the 10th pin, 11th pin and 12th pin of IC602 normal?
No
Investigate the circuit of IC602 from IC1006.

TROUBLESHOOTING GUIDE

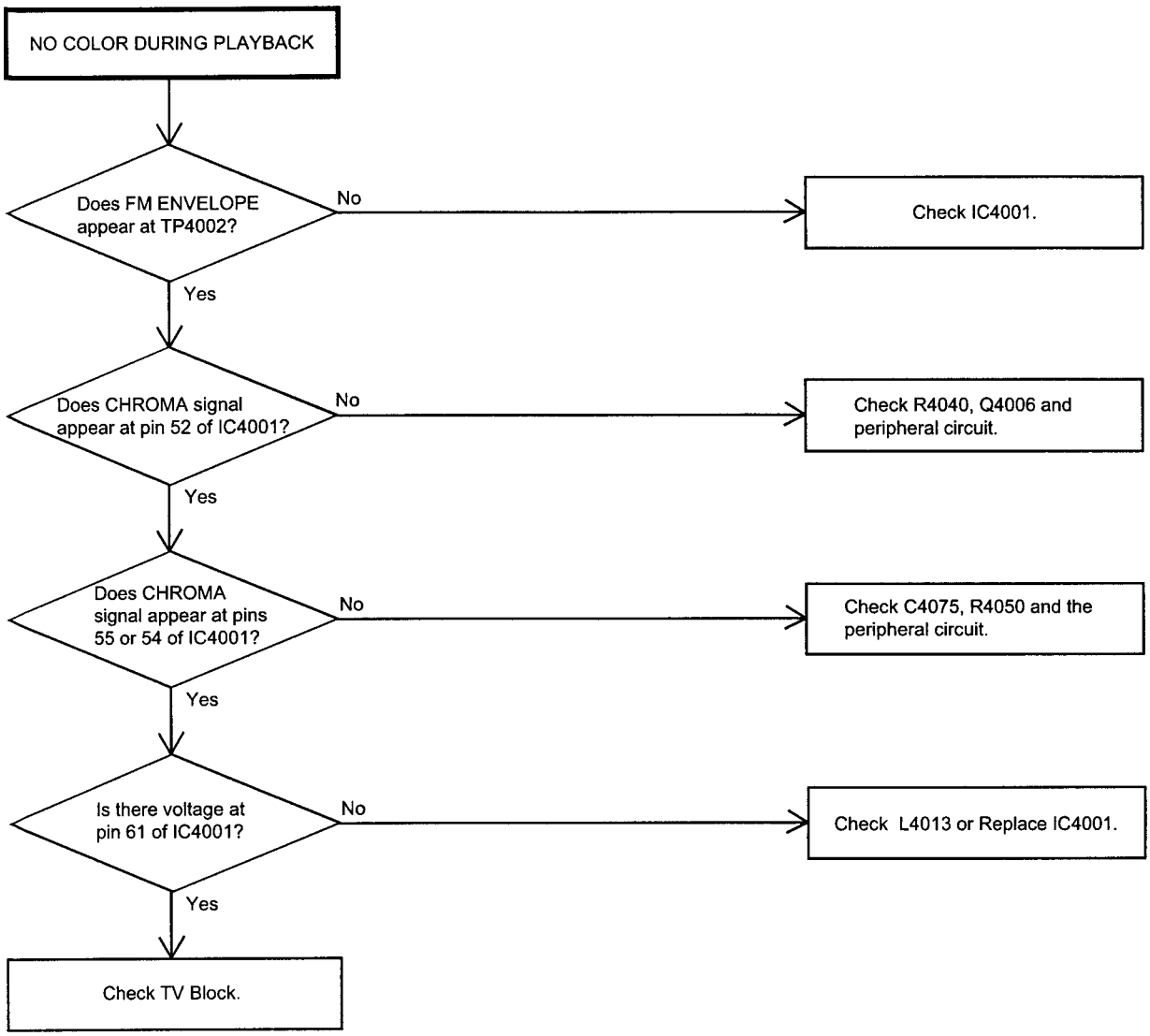
(VCR SECTION)


PLAY SHUTS OFF
Insert a cassette and push PLAY button.
Does Playback change to Stop about 3 seconds later?
Yes
Check TAPE LOADING, CAPSTAN DD UNIT and CYLINDER UNIT.
No
Does Playback change to Stop about 6 seconds later?
Yes
Check REEL SENSOR and CAPSTAN BELT.
No
Check IC1006.

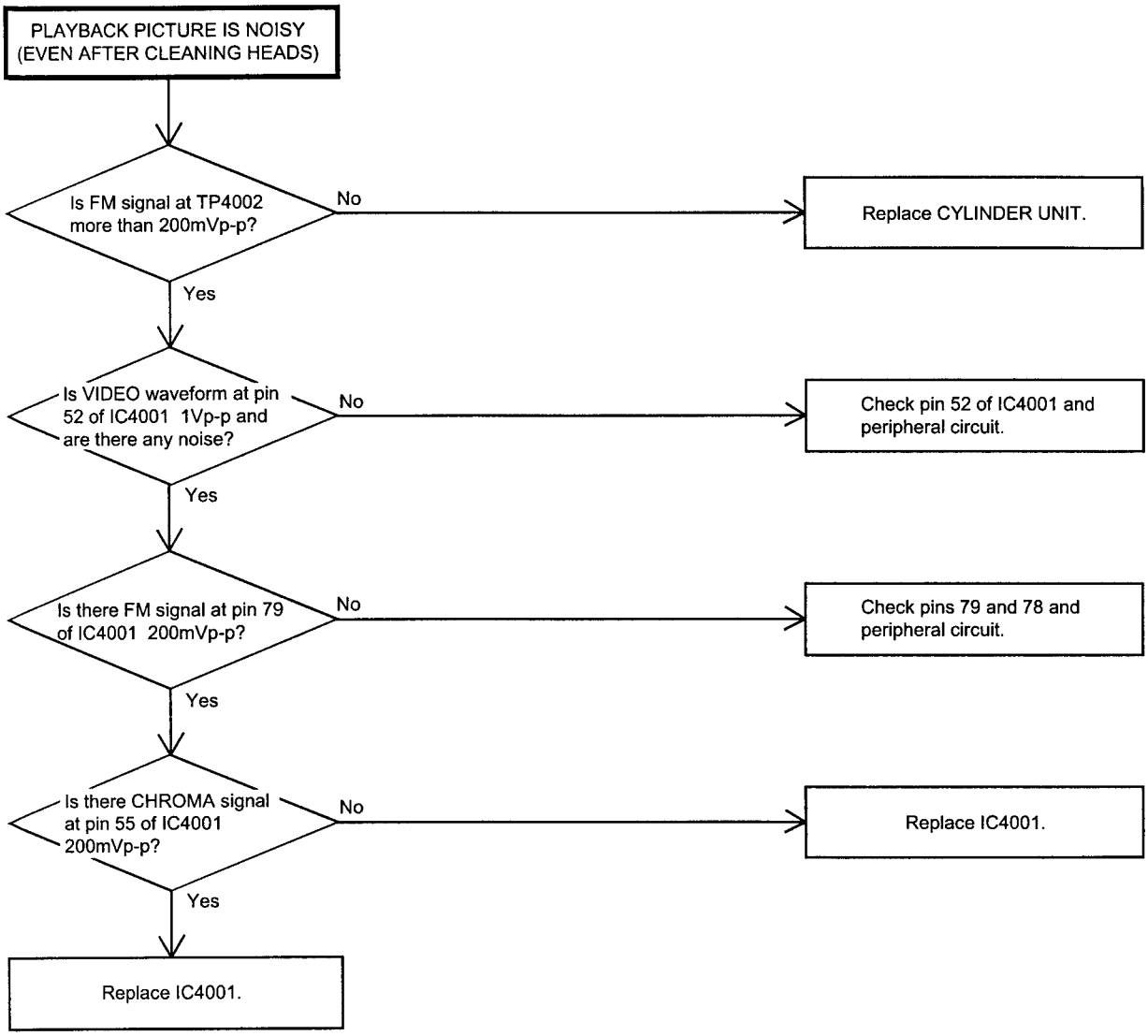
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE
Does E-E appear on the Monitor TV?
No
Is there voltage at pins 12, 36 and 61of IC4001 5V?
No
Check Power circuit.
Yes
Yes
Is there PB Y/C signal at TP4002 ?
No
Check IC4001 and the connection of the CYLINDER.
Yes
Is there FM Y signal at pin 78 or 79 of IC4001?
No
Check C4035, W905 and the peripheral circuit.
Yes
Is there CHROMA signal at pins 55, 54 of IC4001?
No
Check C4075, R4050 and the peripheral circuit.
Yes
Is there VIDEO signal at pin 52 of IC4001?
No
Check R4040, Q4006 or Replace IC4001.
Yes
Check pin 7 of CP603.

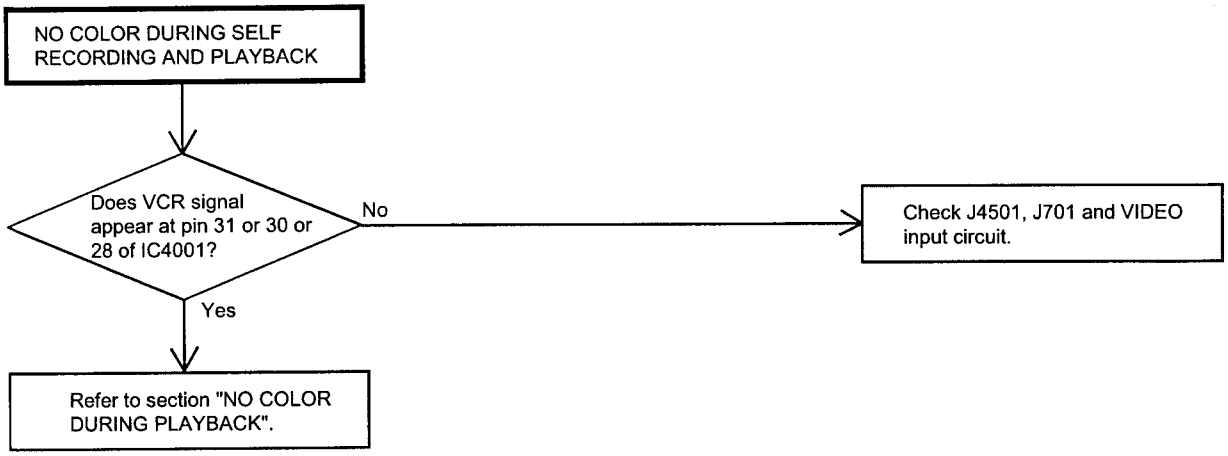
TROUBLESHOOTING GUIDE



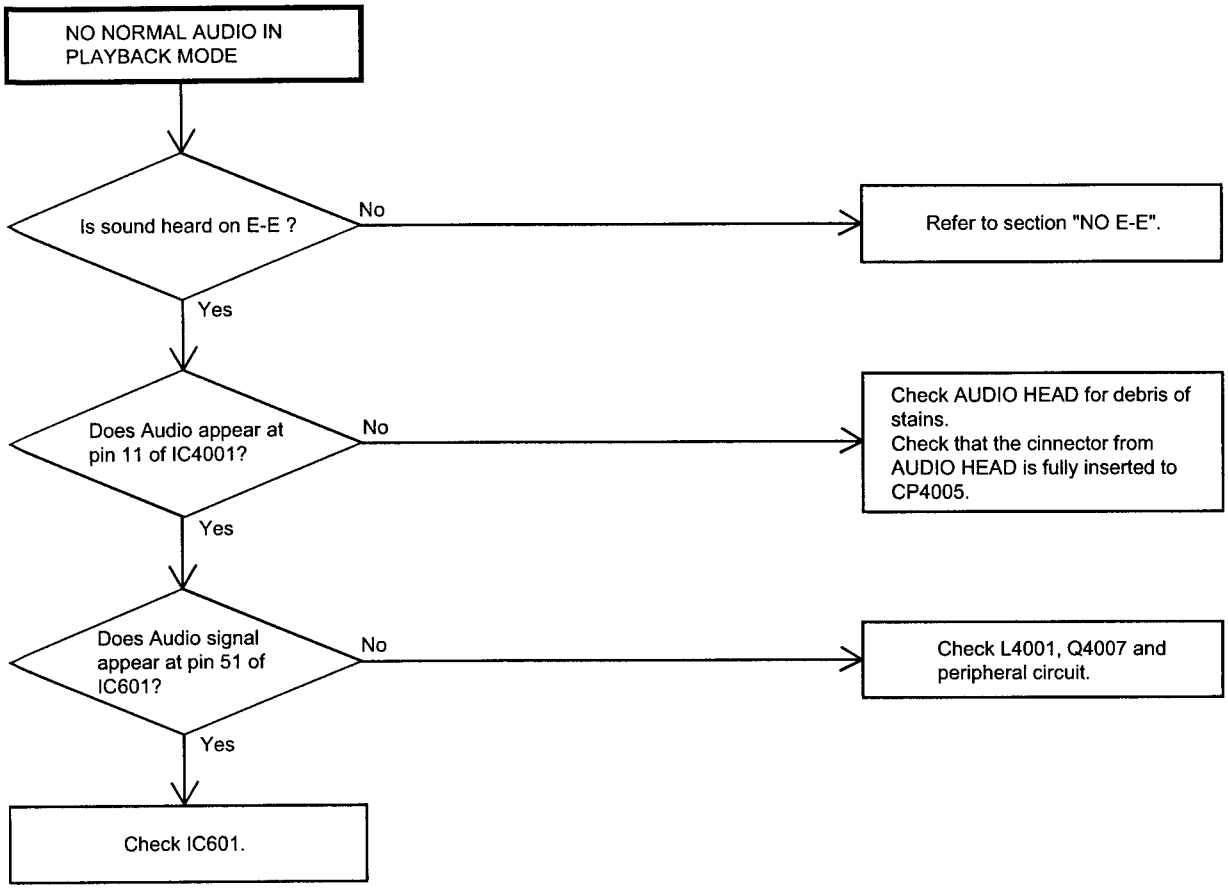
TROUBLESHOOTING GUIDE


PLAYBACK PICTURE IS NOISY
(EVEN AFTER CLEANING HEADS)
Is FM signal at TP4002 more than 200mVp-p?
No
Replace CYLINDER UNIT.
Yes
Is VIDEO waveform at pin 52 of IC4001 1Vp-p and are there any noise?
No
Check pin 52 of IC4001 and peripheral circuit.
Yes
Is there FM signal at pin 79 of IC4001 200mVp-p?
No
Check pins 79 and 78 and peripheral circuit.
Yes
Is there CHROMA signal at pin 55 of IC4001 200mVp-p?
No
Replace IC4001.
Yes
Replace IC4001.

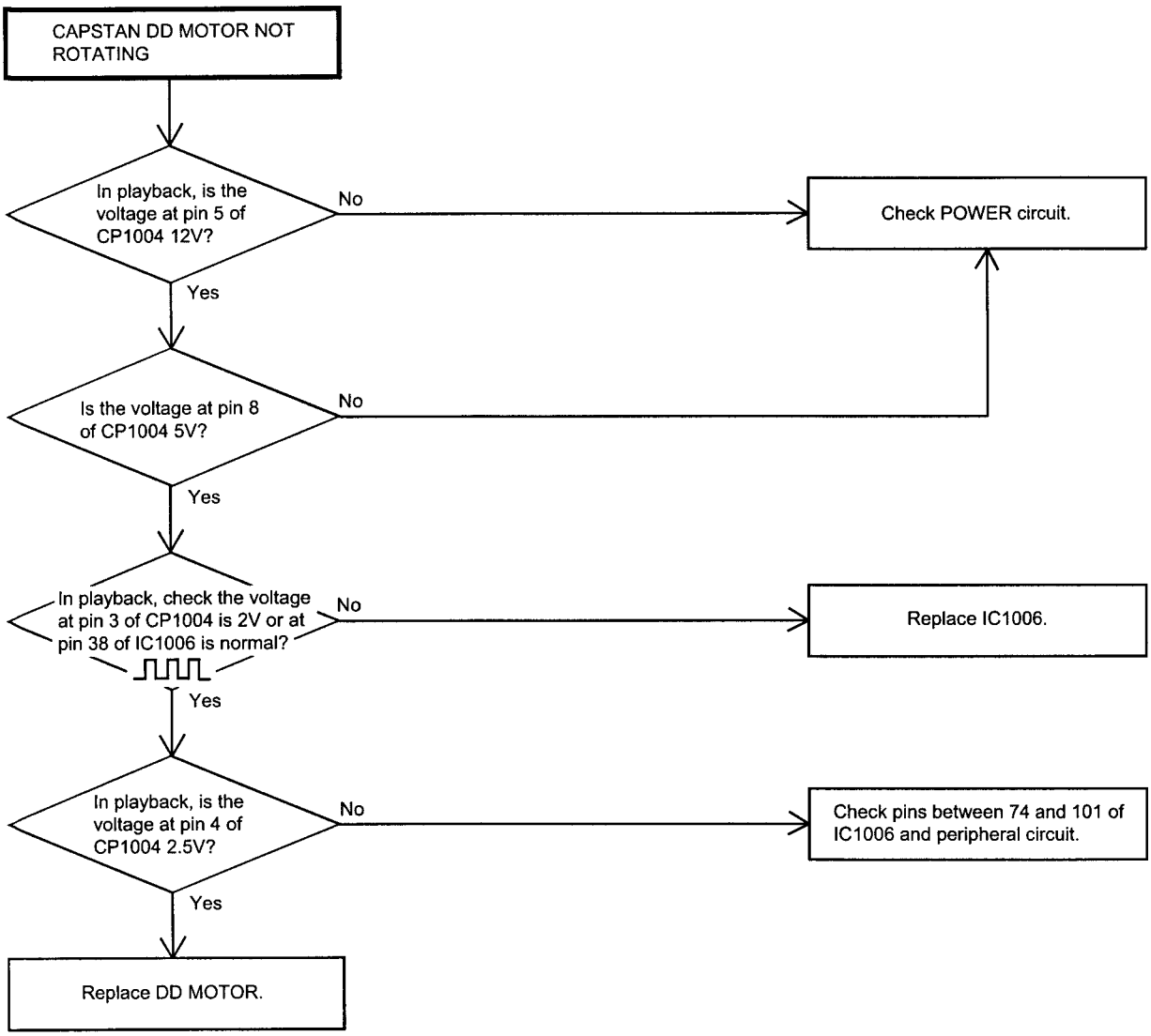
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Does VCR signal appear at pin 31 or 30 or 28 of IC4001?
No
Check J4501, J701 and VIDEO input circuit.
Yes
Refer to section "NO COLOR DURING PLAYBACK".

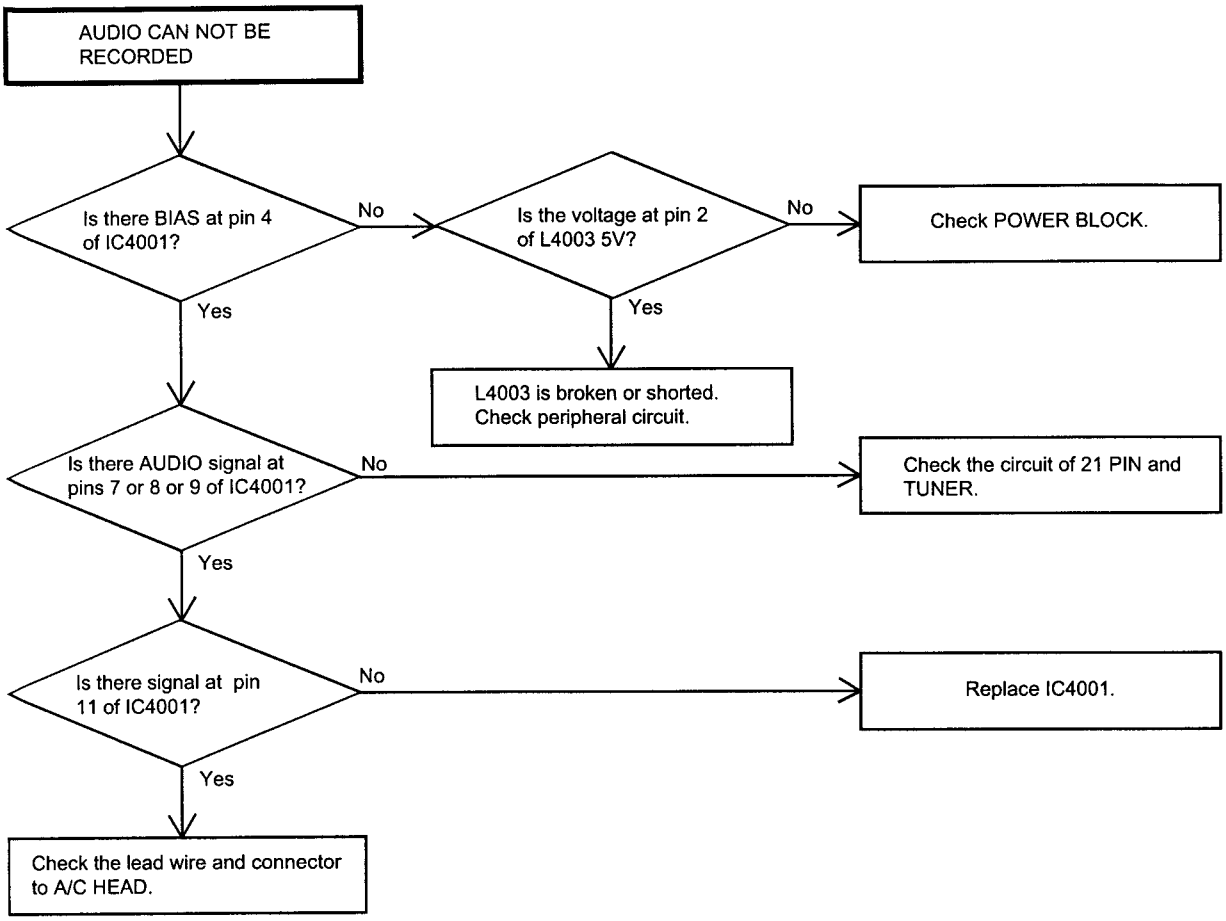
TROUBLESHOOTING GUIDE


NO NORMAL AUDIO IN PLAYBACK MODE
Is sound heard on E-E ?
No
Refer to section "NO E-E".
Yes
Does Audio appear at pin 11 of IC4001?
No
Check AUDIO HEAD for debris of stains.
Check that the cinnector from AUDIO HEAD is fully inserted to CP4005.
Yes
Does Audio signal appear at pin 51 of IC601?
No
Check L4001, Q4007 and peripheral circuit.
Yes
Check IC601.

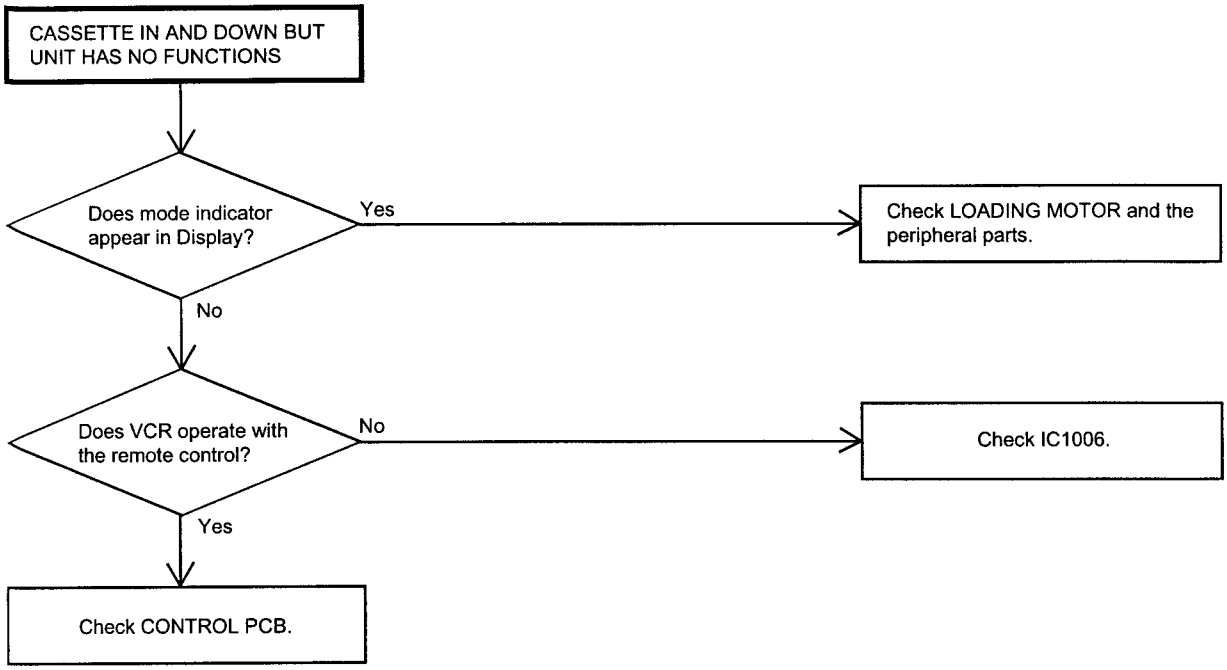
TROUBLESHOOTING GUIDE


CAPSTAN DD MOTOR NOT ROTATING
In playback, is the voltage at pin 5 of CP1004 12V?
No
Check POWER circuit.
Yes
Is the voltage at pin 8 of CP1004 5V?
No
Yes
In playback, check the voltage at pin 3 of CP1004 is 2V or at pin 38 of IC1006 is normal?
No
Replace IC1006.
Yes
In playback, is the voltage at pin 4 of CP1004 2.5V?
No
Check pins between 74 and 101 of IC1006 and peripheral circuit.
Yes
Replace DD MOTOR.

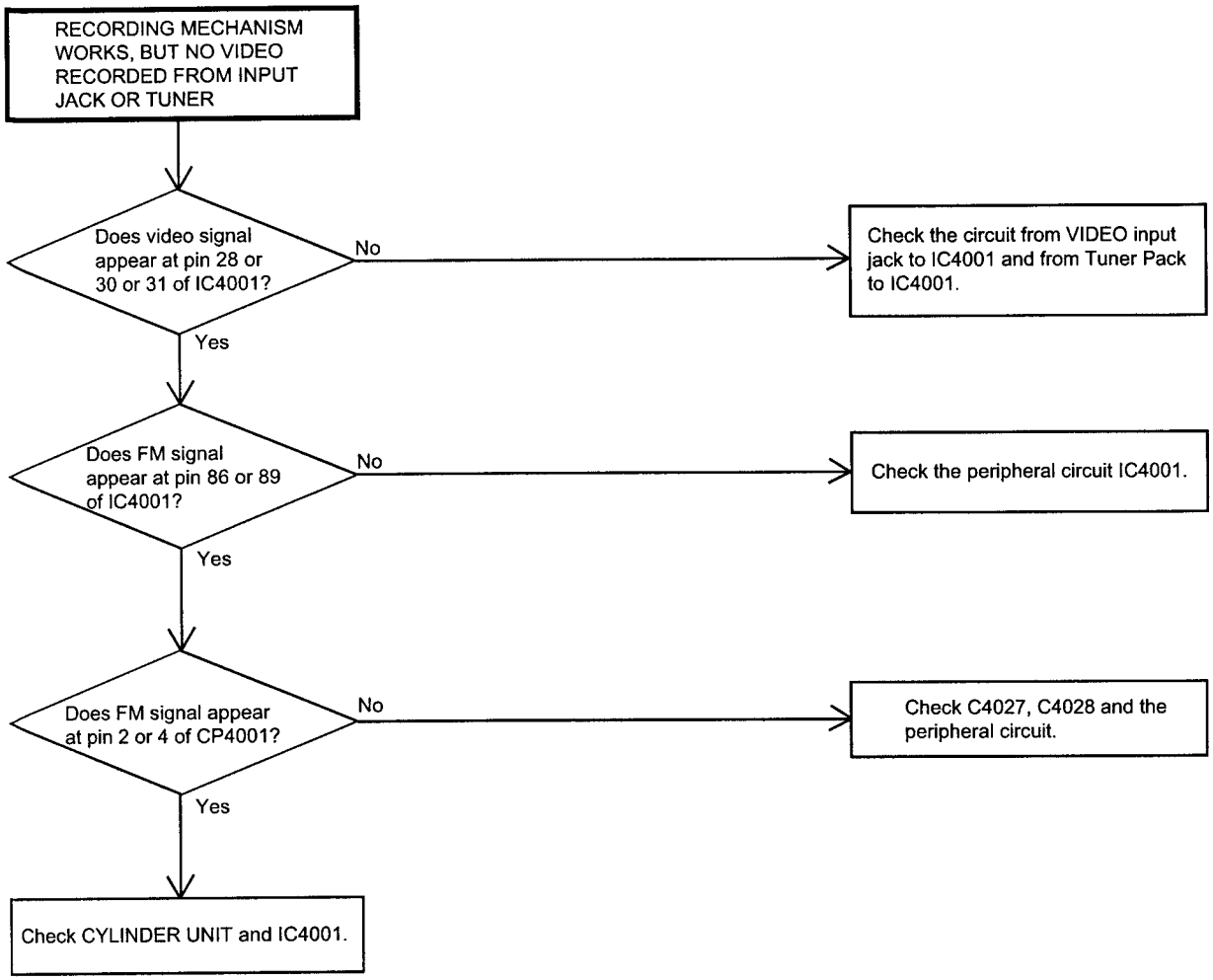
TROUBLESHOOTING GUIDE


AUDIO CAN NOT BE RECORDED
Is there BIAS at pin 4 of IC4001?
No
Is the voltage at pin 2 of L4003 5V?
No
Check POWER BLOCK.
Yes
Yes
L4003 is broken or shorted. Check peripheral circuit.
Is there AUDIO signal at pins 7 or 8 or 9 of IC4001?
No
Check the circuit of 21 PIN and TUNER.
Yes
Is there signal at pin 11 of IC4001?
No
Replace IC4001.
Yes
Check the lead wire and connector to A/C HEAD.

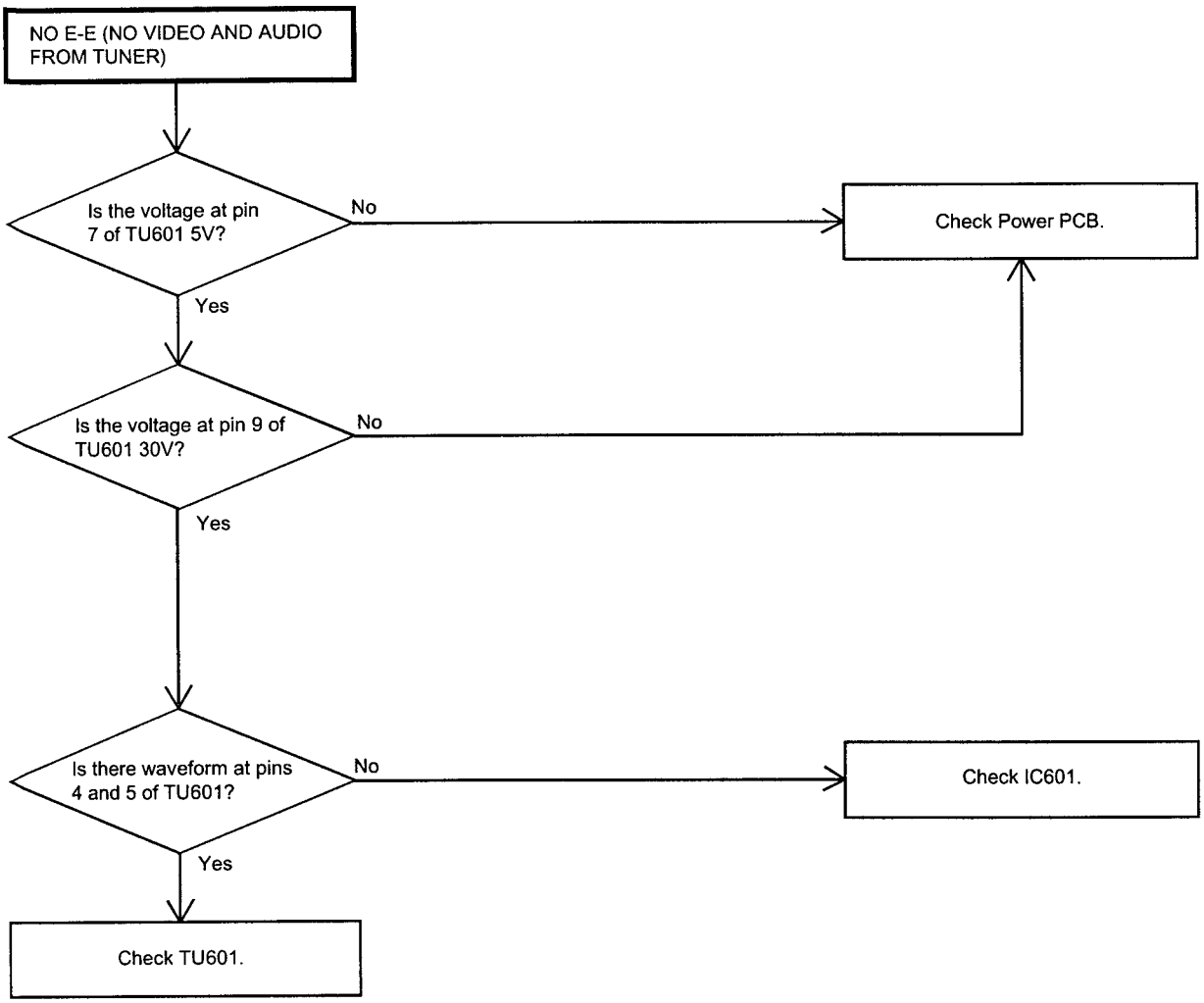
TROUBLESHOOTING GUIDE



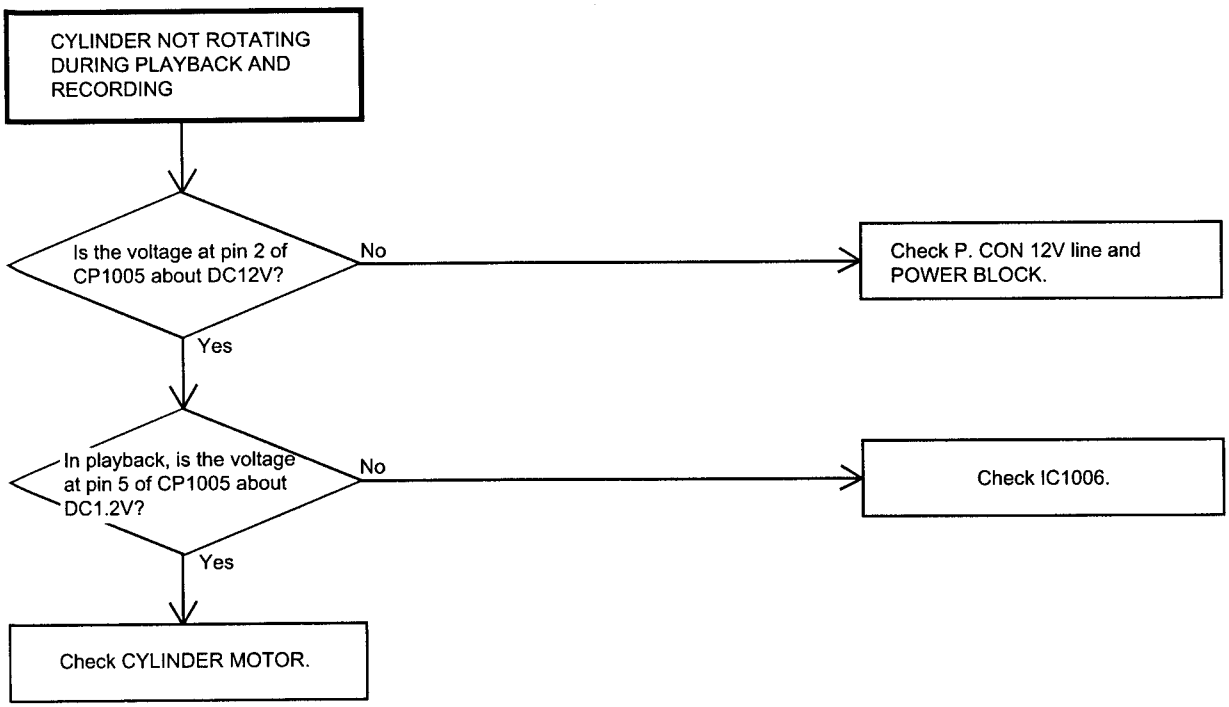
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS, BUT NO VIDEO RECORDED FROM INPUT JACK OR TUNER
Does video signal appear at pin 28 or 30 or 31 of IC4001?
No
Check the circuit from VIDEO input jack to IC4001 and from Tuner Pack to IC4001.
Yes
Does FM signal appear at pin 86 or 89 of IC4001?
No
Check the peripheral circuit IC4001.
Yes
Does FM signal appear at pin 2 or 4 of CP4001?
No
Check C4027, C4028 and the peripheral circuit.
Yes
Check CYLINDER UNIT and IC4001.

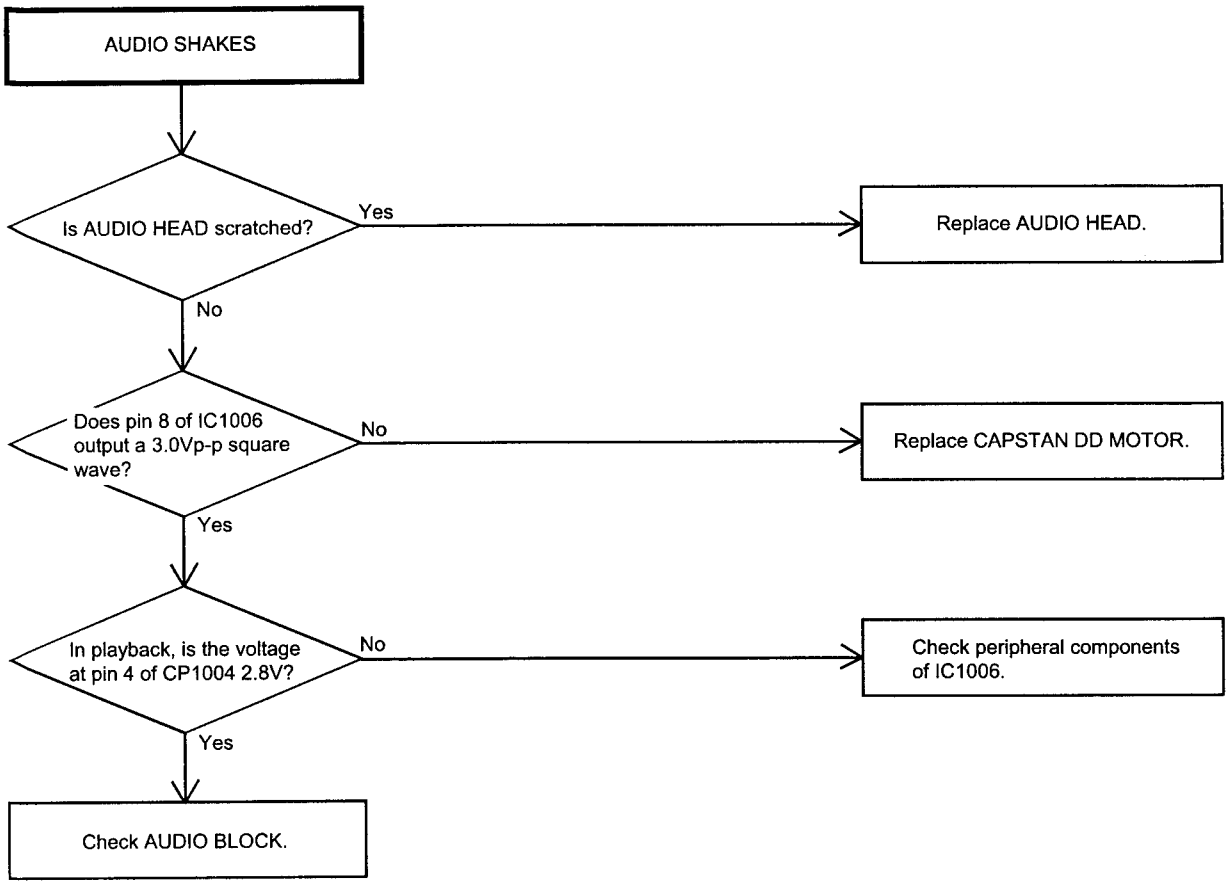
TROUBLESHOOTING GUIDE



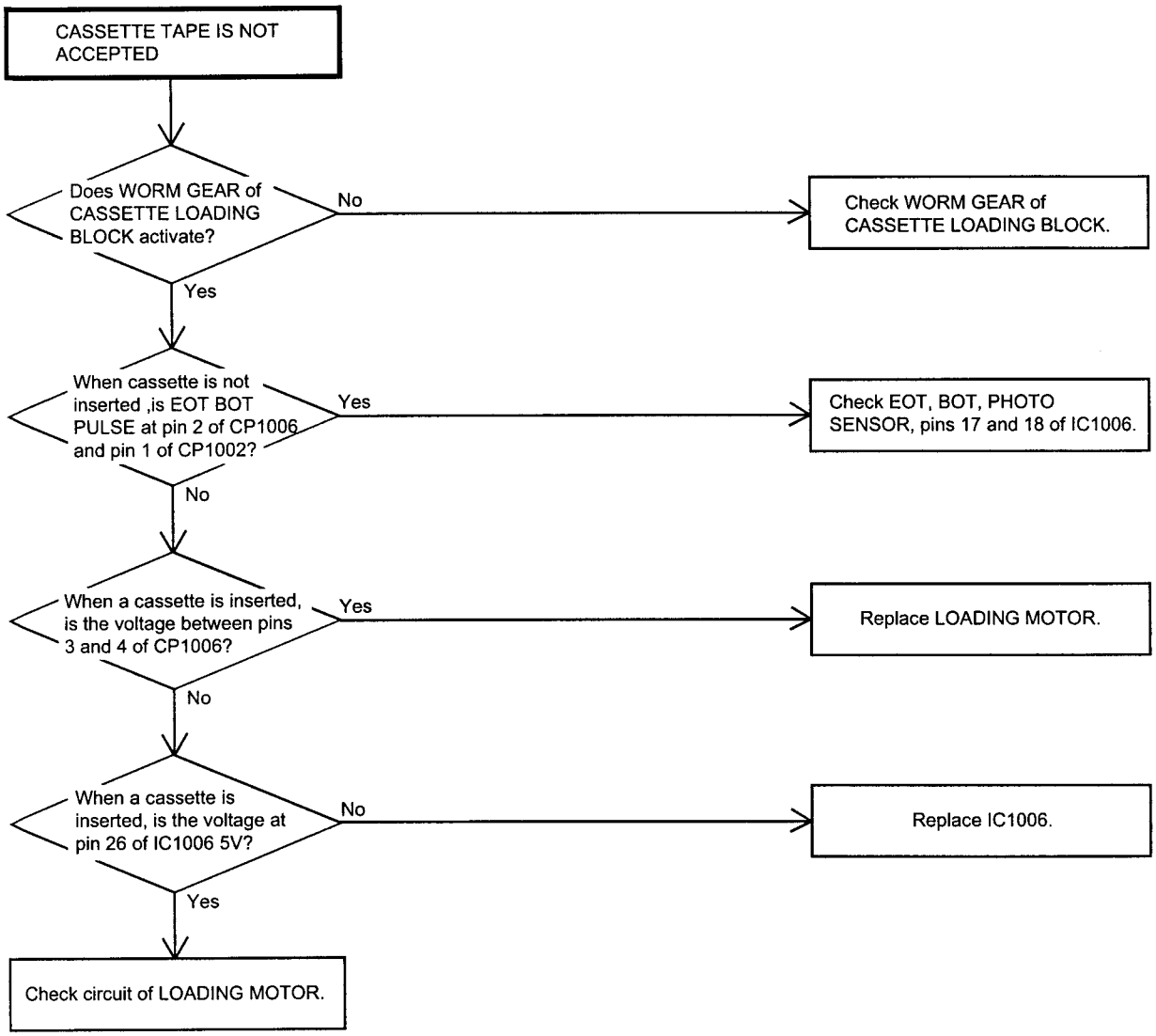
TROUBLESHOOTING GUIDE


CYLINDER NOT ROTATING DURING PLAYBACK AND RECORDING
Is the voltage at pin 2 of CP1005 about DC12V?
No
Check P. CON 12V line and POWER BLOCK.
Yes
In playback, is the voltage at pin 5 of CP1005 about DC1.2V?
No
Check IC1006.
Yes
Check CYLINDER MOTOR.

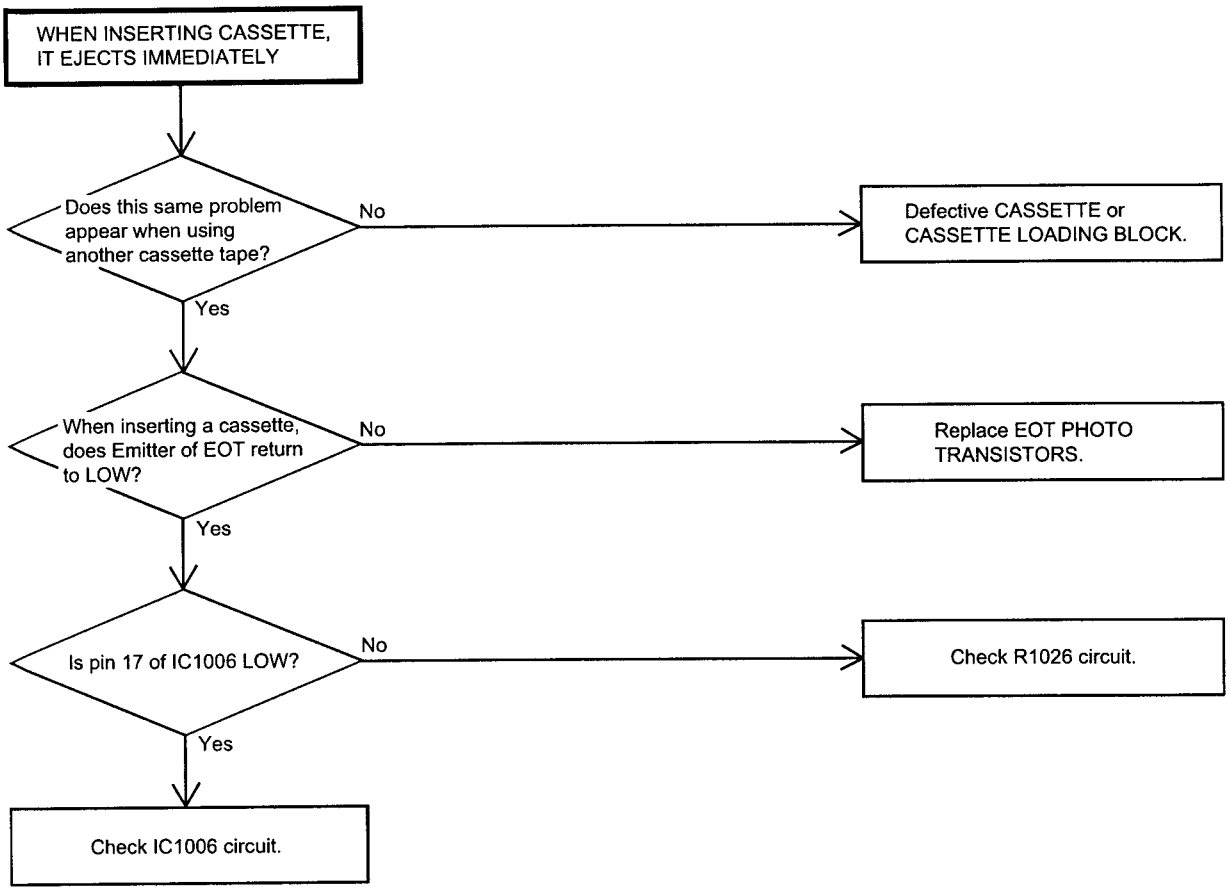
TROUBLESHOOTING GUIDE



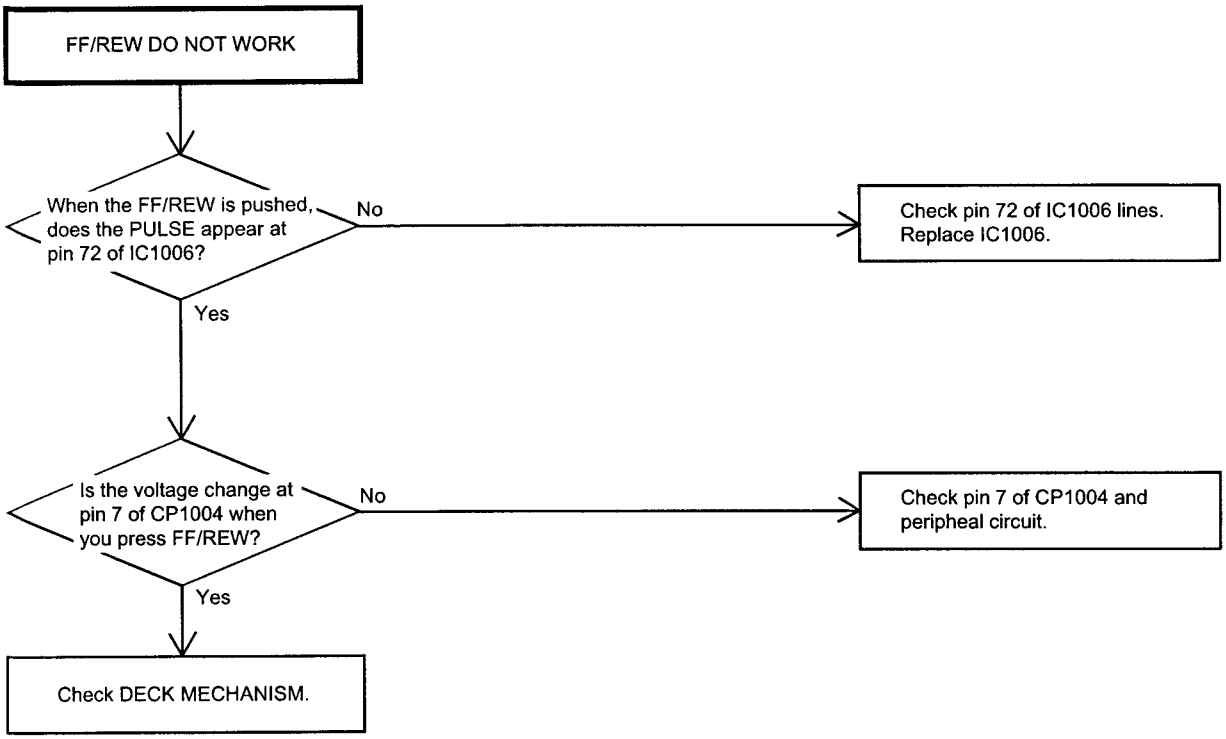
TROUBLESHOOTING GUIDE


CASSETTE TAPE IS NOT ACCEPTED
Does WORM GEAR of CASSETTE LOADING BLOCK activate?
No
Check WORM GEAR of CASSETTE LOADING BLOCK.
Yes
When cassette is not inserted ,is EOT BOT PULSE at pin 2 of CP1006 and pin 1 of CP1002?
Yes
Check EOT, BOT, PHOTO SENSOR, pins 17 and 18 of IC1006.
No
When a cassette is inserted, is the voltage between pins 3 and 4 of CP1006?
Yes
Replace LOADING MOTOR.
No
When a cassette is inserted, is the voltage at pin 26 of IC1006 5V?
No
Replace IC1006.
Yes
Check circuit of LOADING MOTOR.

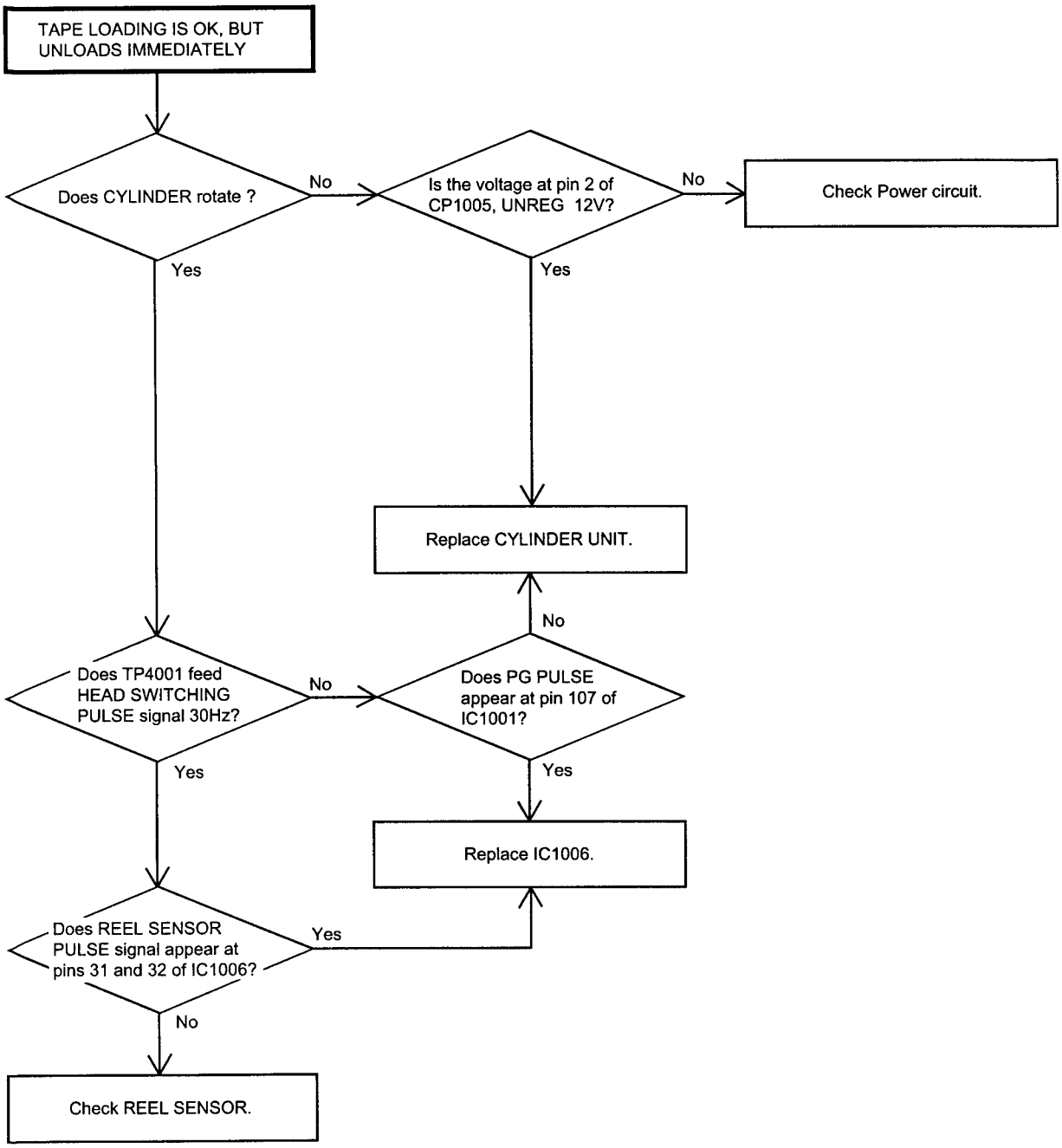
TROUBLESHOOTING GUIDE



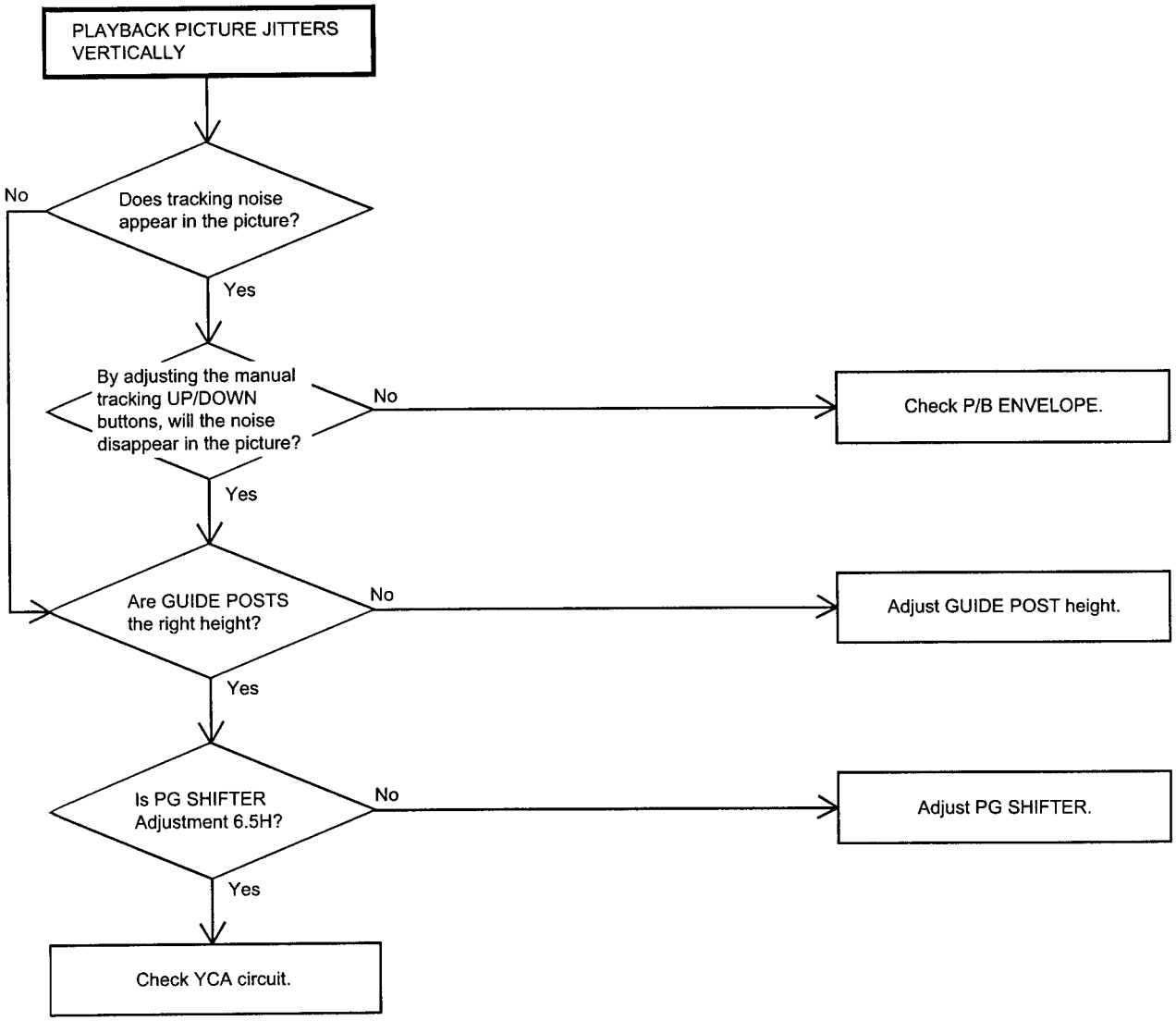
TROUBLESHOOTING GUIDE


FF/REW DO NOT WORK
When the FF/REW is pushed, does the PULSE appear at pin 72 of IC1006?
No
Check pin 72 of IC1006 lines. Replace IC1006.
Yes
Is the voltage change at pin 7 of CP1004 when you press FF/REW?
No
Check pin 7 of CP1004 and peripheal circuit.
Yes
Check DECK MECHANISM.

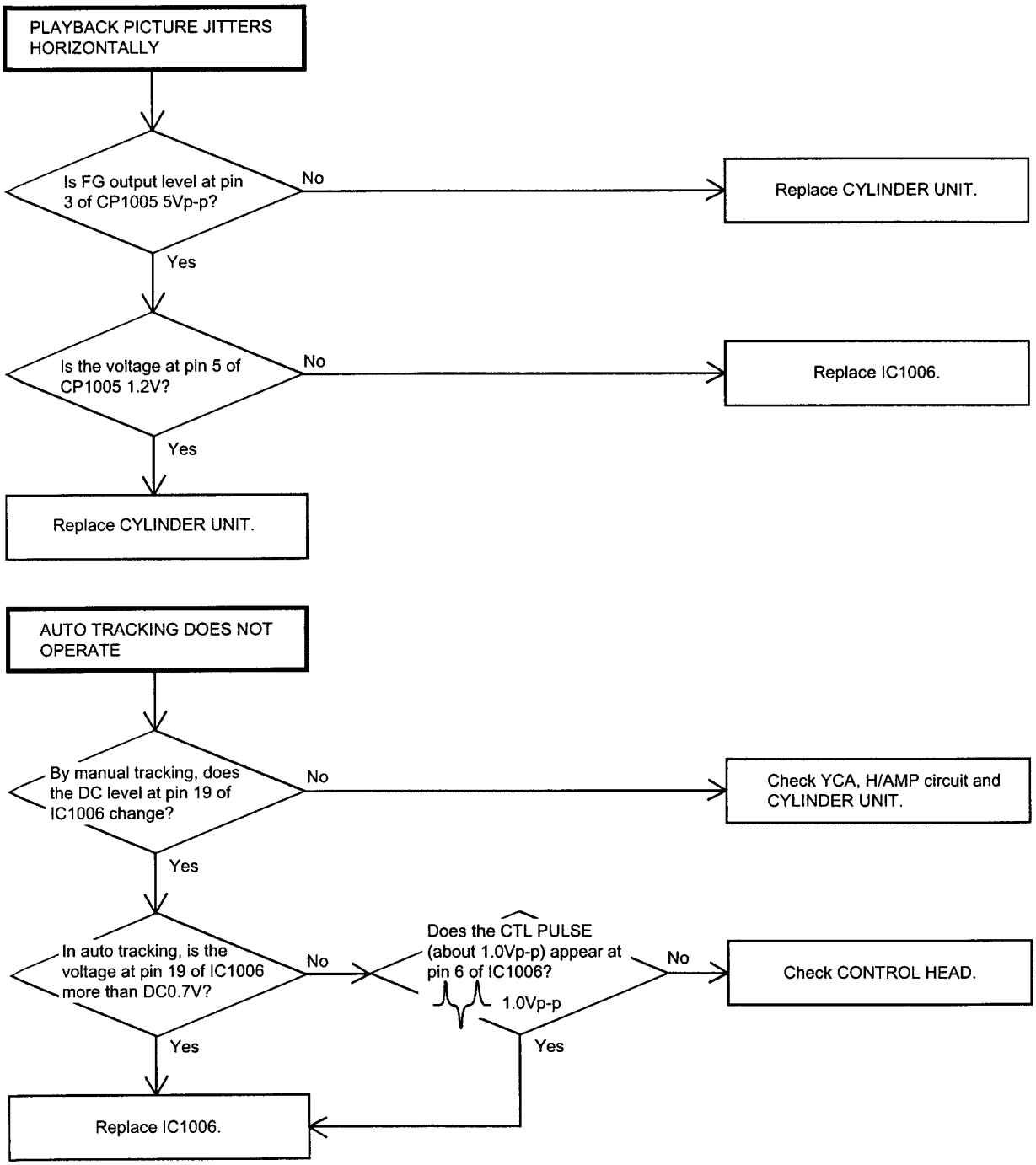
TROUBLESHOOTING GUIDE



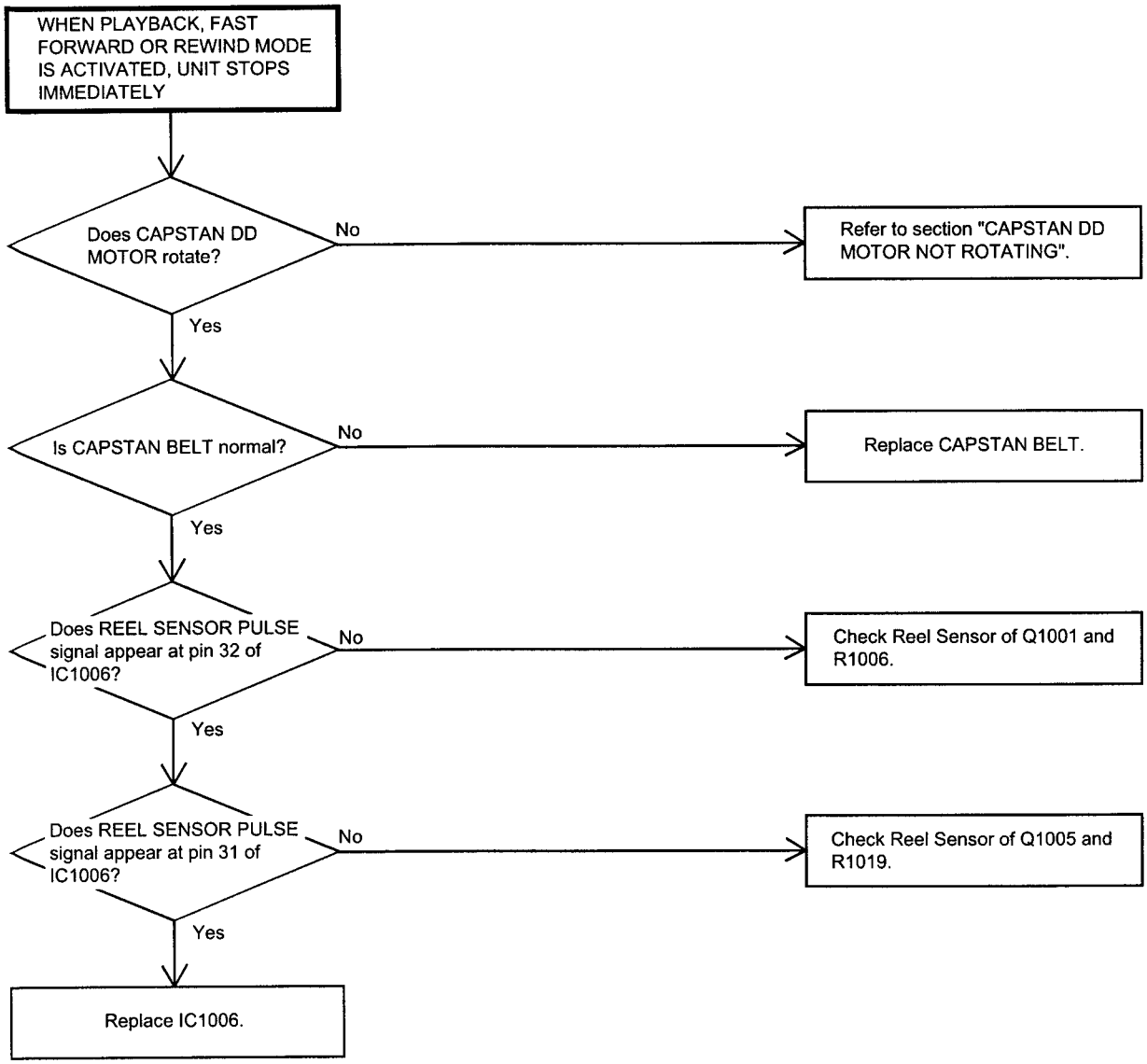
TROUBLESHOOTING GUIDE



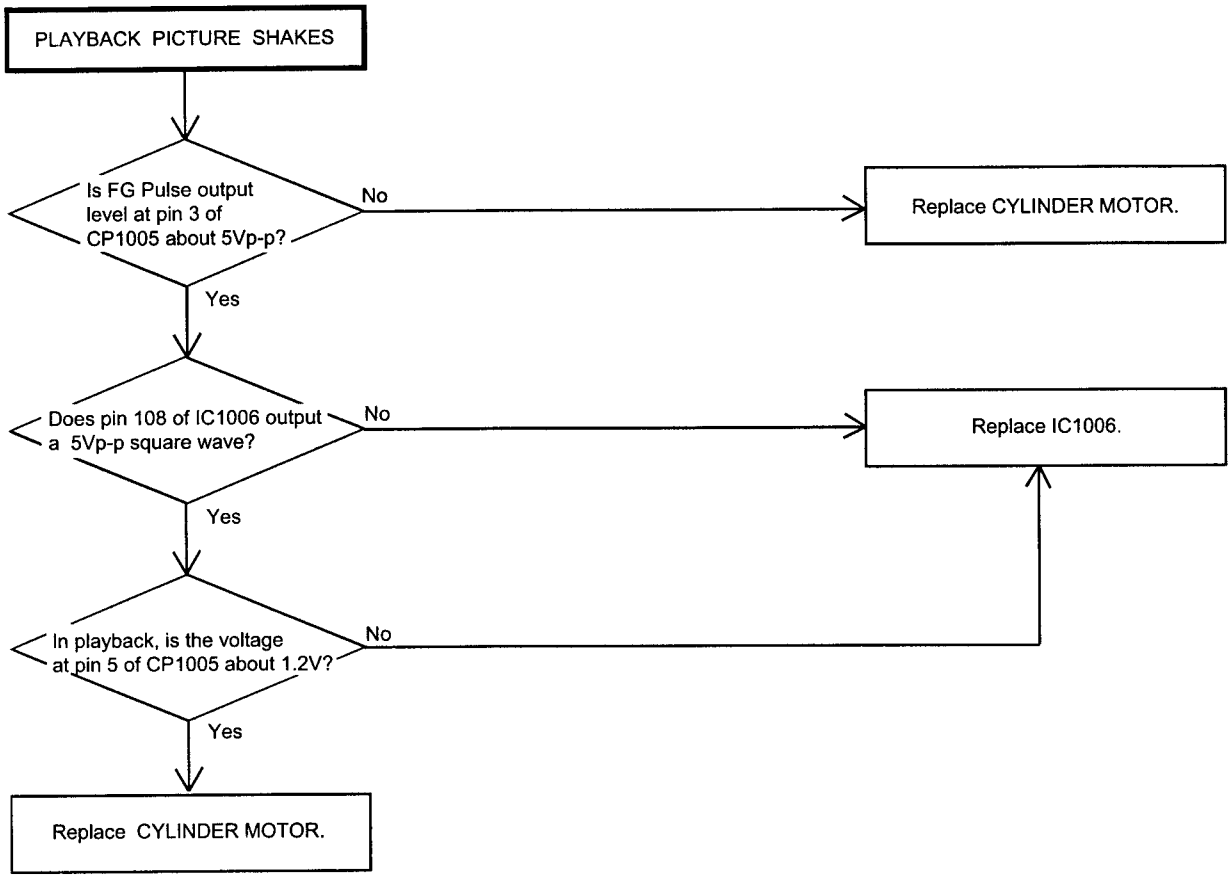
TROUBLESHOOTING GUIDE


PLAYBACK PICTURE JITTERS HORIZONTALLY
Is FG output level at pin 3 of CP1005 5Vp-p?
No
Replace CYLINDER UNIT.
Yes
Is the voltage at pin 5 of CP1005 1.2V?
No
Replace IC1006.
Yes
Replace CYLINDER UNIT.
AUTO TRACKING DOES NOT OPERATE
By manual tracking, does the DC level at pin 19 of IC1006 change?
No
Check YCA, H/AMP circuit and CYLINDER UNIT.
Yes
In auto tracking, is the voltage at pin 19 of IC1006 more than DC0.7V?
No
Does the CTL PULSE (about 1.0Vp-p) appear at pin 6 of IC1006?
1.0Vp-p
No
Check CONTROL HEAD.
Yes
Yes
Replace IC1006.

TROUBLESHOOTING GUIDE


WHEN PLAYBACK, FAST FORWARD OR REWIND MODE IS ACTIVATED, UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate?
No
Refer to section "CAPSTAN DD MOTOR NOT ROTATING".
Yes
Is CAPSTAN BELT normal?
No
Replace CAPSTAN BELT.
Yes
Does REEL SENSOR PULSE signal appear at pin 32 of IC1006?
No
Check Reel Sensor of Q1001 and R1006.
Yes
Does REEL SENSOR PULSE signal appear at pin 31 of IC1006?
No
Check Reel Sensor of Q1005 and R1019.
Yes
Replace IC1006.

TROUBLESHOOTING GUIDE



IC DESCRIPTIONS

OEC0078C (IC1006)

No.	PORT	PIN NAME	I/O	DESCRIPTION
1	CTL(+)	CTL(+)	I/O	Input and output terminal of Control Head.
2	SVSS	SVSS	—	Ground.
3	CTL(-)	CTL(-)	I/O	Input terminal of Control Head.
4	CTLBIAS	CTLBIAS	IN	Input terminal for Control Bias.
5	CTLFB	CTLFB	IN	Input terminal for Control Feedback.
6	CTLAMP(O)	CTLAMP(O)	OUT	Output terminal for Control Amp Output.
7	CTLSMT(I)	CTLSMT(I)	IN	Input terminal for Control SMT Input.
8	CFG	CFG	IN	Input terminal for Capstan FG input.
9	SVCC	SVCC	—	P.CON +5 V.
10	AVCC	AVCC	—	AT +5 V.
11	AN0	Hi-Fi_ENV	IN	Input terminal of HIFI sound envelope signal.
12	AN1	KEY_A	IN	Main unit key input.
13	AN2	KEY_B	IN	
14	AN3	MSSEN_B	IN	Input terminal of mecha state sensor.
15	AN4	MSSEN_A	IN	
16	AN5	AFT.S.CURVE	IN	AFT S.CURVE input for tuner.
17	AN6	EOT	IN	Tape end sensor input signal.
18	AN7	BOT	IN	Tape start sensor input signal.
19	AN8	VIDEO_ENV	IN	Input terminal of Video RF envelope.
20	AN9	DEW	IN	Input terminal of Dew sensor
21	ANA	TUNER AGC	IN	Input terminal of Electric field strength for Auto setup.
22	ANB	MESECAM-H	IN	Input terminal of MESECAM or NOT
23	AVSS	AVSS	—	Ground.
24	P50	FF/REW-L	OUT	Not used.
25	P51	LDM_RVS	OUT	Output signal to control the rotation direction of the loading motor.
26	P52	LDM_FWD	OUT	
27	P53	AKB CTL	OUT	Output signal to Adjustment of AKB WHITE
28	P40	DA RGB SW	OUT	Output signal to cut of RGB sync
29	P41	SECAM-H	OUT	Output signal of SECAM or NOT
30	P42	-	—	Not used.
31	P43	REEL-T	IN	Input terminal of reel sensor TAKE UP.
32	P44	REEL-S	IN	Input terminal of reel sensor SUPPLY.
33	P45	CAP_MID-H	OUT	Output terminal for capstan speed medium.
34	P46	CAP_HI-H	OUT	Output terminal for capstan speed high.
35	P46	TV POWER_ON-H	OUT	For control of the user TV-power switch ON/OFF.
36	P30	VCR POWER_ON-H	OUT	For control of the user VCR-power switch ON/OFF.
37	P31	VV-H	OUT	Output terminal for select Playback/Recording at the circuit of sound.
38	P32	CAP_LIMIT3	OUT	Switch the maximum out put current of the CAPSTAN Motor
39	P33	IIC OFF	IN	Input signal to Communications of all the terminals are cut(for Factory adjustment)
40	P34	PICTURE_CONTROL	OUT	Not used.
41	P35	CENT_LED	OUT	Output terminal for center LED control.
42	P36	CTL_MONITOR	OUT	Output terminal for control Monitor.

IC DESCRIPTIONS

OEC0078C (IC1006)

No.	PORT	PIN NAME	I/O	DESCRIPTION
43	VSS	VSS	—	Ground.
44	P37	DEGAUSS	OUT	Output terminal for DEGAUSS
45	VCC	VCC	—	AT +5V.
46	SI1	SI1	IN	Input terminal of DATA FZTAT input.
47	SO1	SOD DATA	OUT	Output terminal of DATA FZTAT output.
48	SCK1	-	—	Not used.
49	SDA	IIC_DATA	OUT	Output Data terminal for I2CBUS communivation.
50	SCL	IIC_CLK	OUT	Output Clock terminal for I2CBUS communivation.
51	SI2	OSD_CE	OUT	Output terminal of signal OSD_IC is CE.
52	SO2	OSD_DATA	OUT	Output terminal of OSD DATA.
53	SCK2	OSD_CLK	OUT	Output terminal of OSD Clock data.
54	P10	POWER_FAIL	IN	input for AC power.
55	P11	-	—	Not used.
56	P12	P12	IN	AT +5 V.
57	P13	P13	IN	
58	P14	P14	IN	
59	/IRQ5	-	—	Not used.
60	/IC	REMOCON IN	IN	Receive the remote control signal input.
61	P17	32KHz_MONITOR	OUT	Not used.
62	FEW	FEW	IN	Input terminal of FZTAT signal(L: low signal input).
63	/NMI	/NMI	—	AT +5 V.
64	X2	X2	OUT	Subclock pluse (32.768KHz).
65	X1	X1	IN	Subclock pluse (32.768KHz).
66	/RES	/RES	IN	RESET will be done when the voltage goes to HIGH after the restart signal.
67	OSC1	OSC1	IN	Connect the main crystal (10MHz).
68	VSS	VSS	—	Ground.
69	OSC2	OSC2	OUT	Connect the main crystal (10MHz).
70	VCC	VCC	—	AT +5 V.
71	MD0	MD0	IN	Input terminal of FZTAT signal.
72	P60	CAP_FWD-L	OUT	Capstan forward and backward command.
73	P61	CAP_LIMIT	OUT	Not used.
74	P62	CAP_FULL	OUT	Output the HIGH during the acceleration force of Capstan Motor at SLOW mode.
75	P63	CYL_SPEED_UP	OUT	Output terminal for correct cylinder during SLOW.
76	P64	CAP_LIMIT1	OUT	Not used.
77	P65	CAP_LIMIT2	OUT	Not used.
78	P66	MS_SENS_CTL	OUT	Output terminal to drive sensor control.
79	P67	TAB_SW	IN	Input terminal for judge the tape if it has TAB or not.
80	P70	TEXT RESET	OUT	Output terminal of reset for TEXT_IC.
81	P71	TV MUTE-H	OUT	Mute signal of TV mute.
82	VCC	VCC	—	AT +5 V.
83	P72	TUNER MUTE-H	OUT	Mute signal of audio mute for tuner.
84	VSS	VSS	—	Ground.
85	P73	VCR MUTE-H	OUT	Mute signal of VCR mute.

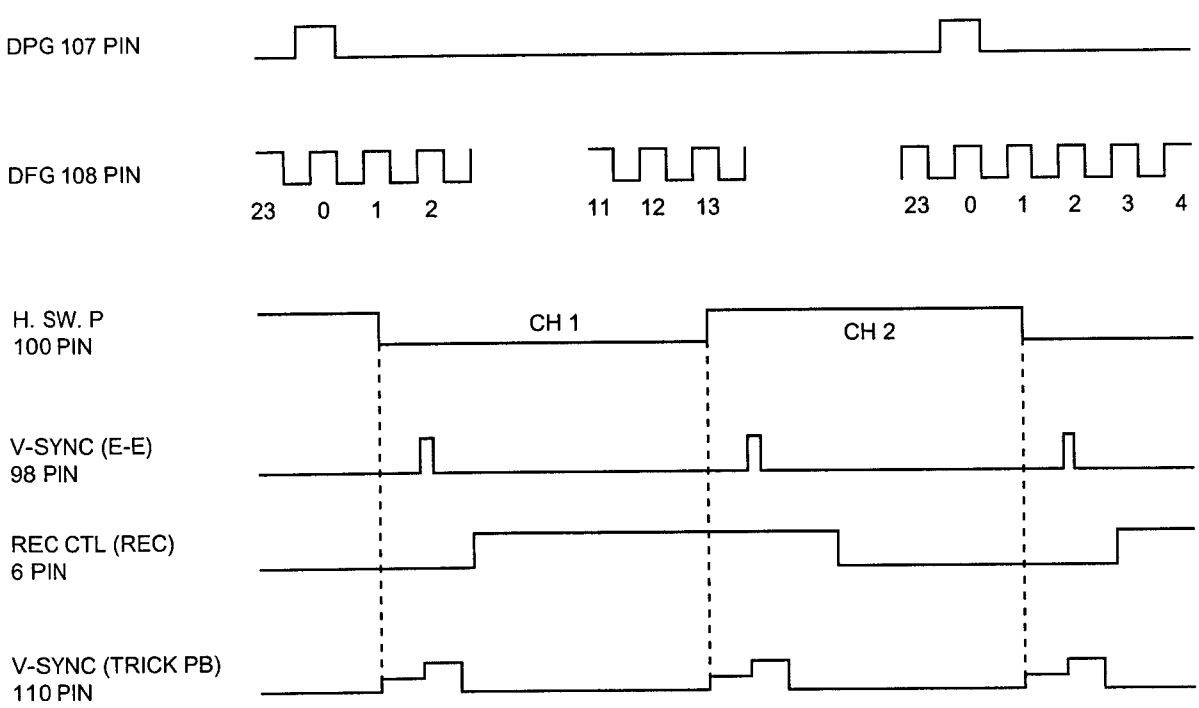
IC DESCRIPTIONS

OEC0078C (IC1006)

No.	PORT	PIN NAME	I/O	DESCRIPTION
86	P74	V.REC.START-H	OUT	Output terminal for REC signal when record.
87	P75	PAL/SECAM	IN	Input terminal from secam_chroma_ic for SECAM or NOT
88	P76	SOUND B	IN	Input terminal of SOUND IF(4.5MHz,5.5MHz,6.0MHz,6.5MHz)
89	P77	SOUND A	IN	
90	P80	OTPB LED	OUT	Output terminal control for OTPB-LED voltage drive.
91	P81	SERVICE	IN	Input terminal for Service Mode.
92	SV1	SV1	OUT	Not used.
93	SV2	SV2	OUT	
94	P84	ON_TIMER LED	OUT	Output terminal control for ON_TIMER-LED voltage drive.
95	P85	PLAY LED	OUT	Output terminal control for PLAY-LED voltage drive.
96	P86	T-REC LED	OUT	Output terminal control for T-REC-LED voltage drive.
97	P87	REC LED	OUT	Output terminal control for REC-LED voltage drive.
98	C.SYNC	C.SYNC	IN	Input terminal for composite C SYNC.
99	AUDIO FF	Hi-Fi_H.SW	OUT	Output terminal of signal HI-FI sound head switching.
100	VIDEO FF	VIDEO_H.SW	OUT	Output terminal of signal Video head switching.
101	CAP PWM	CAP_PWM	OUT	Output terminal for PWM of Capstan Motor.
102	DRUM PWM	DRUM_PWM	OUT	Output terminal for PWM of Drum Motor.
103	C.ROT	-	—	Not used.
104	H.AMP.SW	-	—	
105	COMP	-	—	
106	EXCTL	EXT IN-L	IN	Input terminal for Compulsion outside input.
107	DPG	DPG	IN	Input terminal for DRUM PG signal.
108	DFG	DFG	IN	Input terminal for DRUM FG signal.
109	VCC	VCC	—	AT +5V.
110	VPULSE	DUMMY.V.SYNC	OUT	Output terminal of Video Pluse signal.
111	VSS	VSS	—	Ground.
112	CTLREF	CTLREF	OUT	Output terminal for AMP REFERENCE.

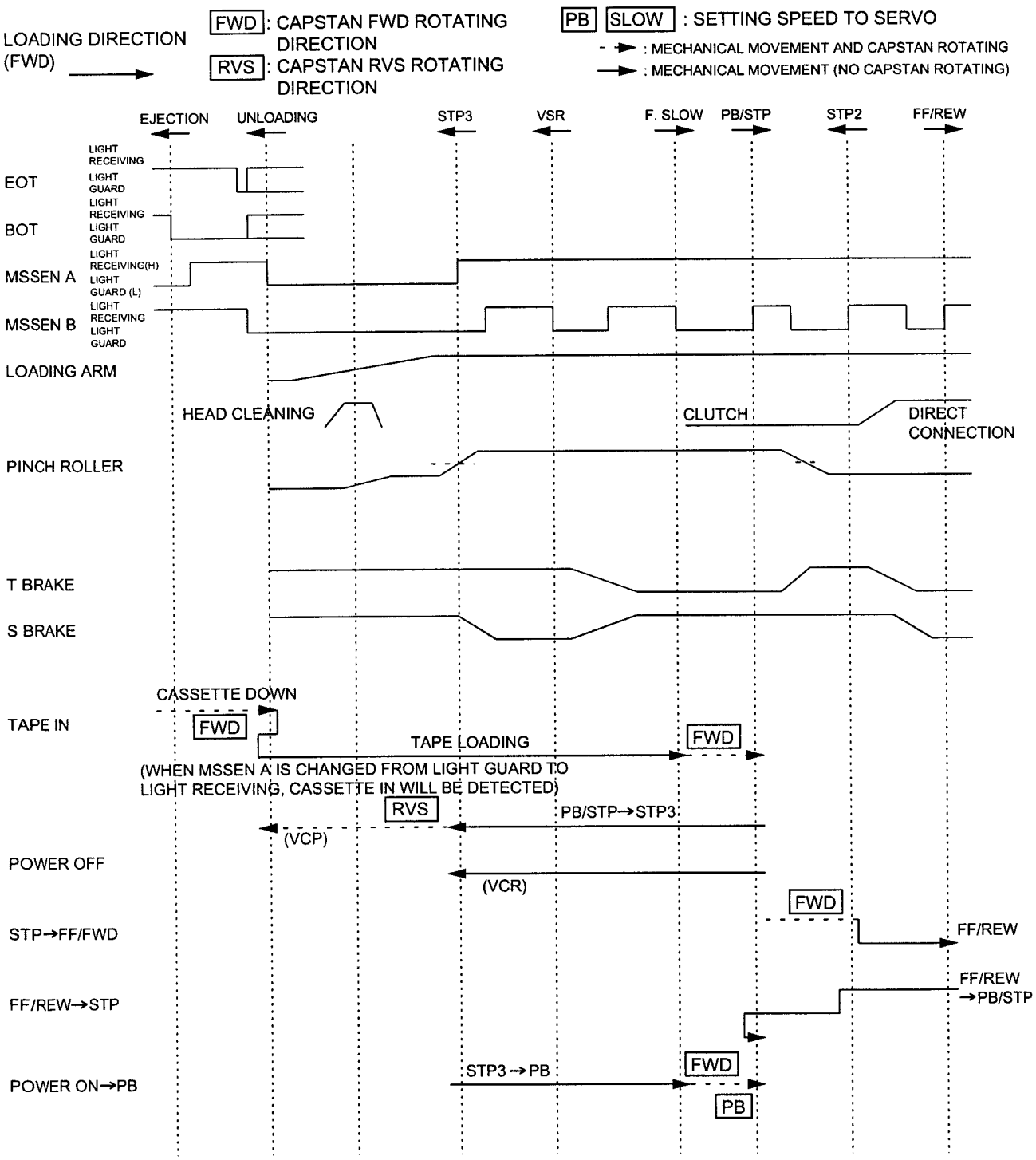
SERVO TIMING CHART

IC1006 (OEC0078C)



• WAVEFORM CHANGES DEPENDED ON THE TAPE SPEED

SYSTEM SWITCH MODE



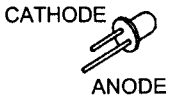
SEMICONDUCTOR BASE CONNECTIONS

DIODE

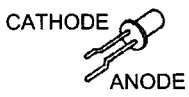
1SS133T-77
MTZJ12B T-77
MTZJ13B T-77
MTZJ33B T-77
MTZJ5.6B T-77
MTZJ6.8B T-77
RB721QT-77
SB10-03A3

11E1N-TA1B2
11E1TA1B2
11EQS04N-TA1B2
11ES1N-TA1B2
1N4005E-6580-G23
GP15M-G23
RD12FB-T7
RU2YX-V1

10ELS2N-TA1B2
21DQ09N-TA2B1
EG-01C
EG01Z-V0
RMPG06J-G3
RU2AM V1

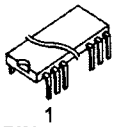


SID1050CM

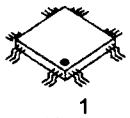


EM-553-F1T
EQ-552-F1T

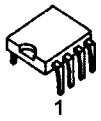
IC



54PIN
LA76812



100PIN
HA118217F
112PIN
OEC0078C



8PIN
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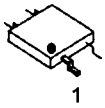

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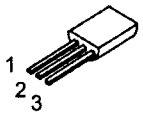

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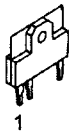
RE5VS31A



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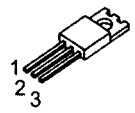

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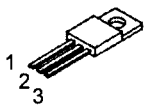
NJM7812FA



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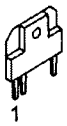

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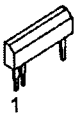

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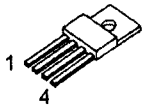

4PIN
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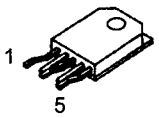
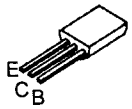


5PIN
STR-F6707

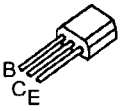
4PIN
ON3171R

SEMICONDUCTOR BASE CONNECTIONS

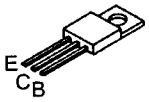
TRANSISTOR



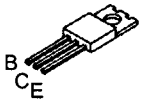
2SA1371(D,E)-AE
2SA733(C)-T(P,Q)
2SB892(S,T)-AE
2SC1815Y(TPE2)
2SC2271(D,E)-AE
2SC2274-AA
2SC2909(S,T)-AA
2SC3000-AA
2SC945(C)-T(P,Q)
2SD734(E,F)-AA



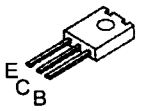
2SA933STP(R,S)
2SC1740SP TP
DTC114TSTP



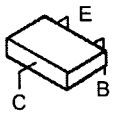
2SD2396(J,K)



2SC4160-OEC-YAC1

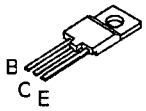


2SC4217(D,E)-RAC



2SA1037AKT146R,S
2SC2412KT146 R,S
DTC114EKT147

GP1S94L



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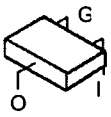
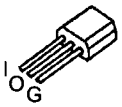


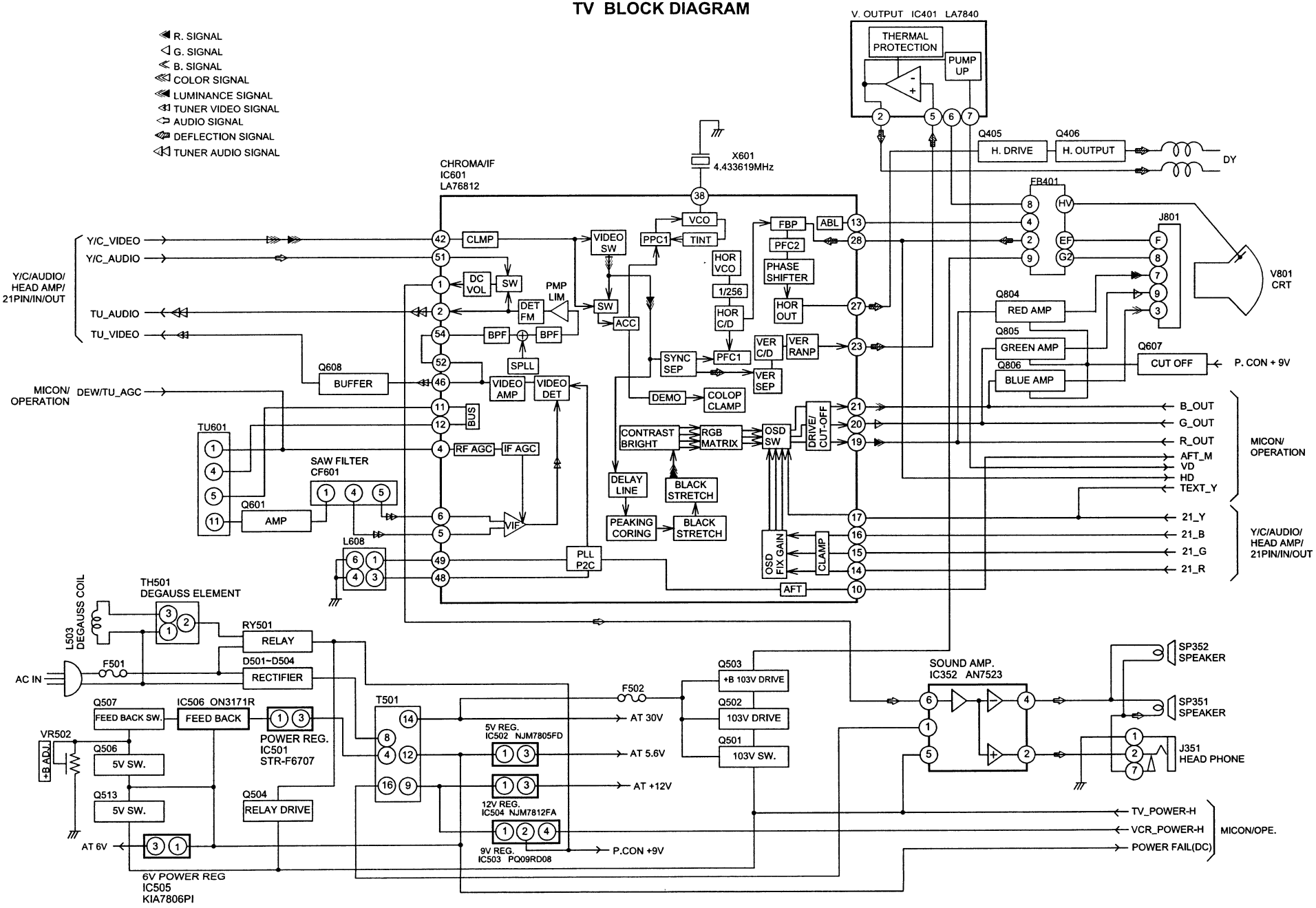
DTA114EKAT146
DTA124EKAT146
DTC124EKAT146
DTC143EKAT146



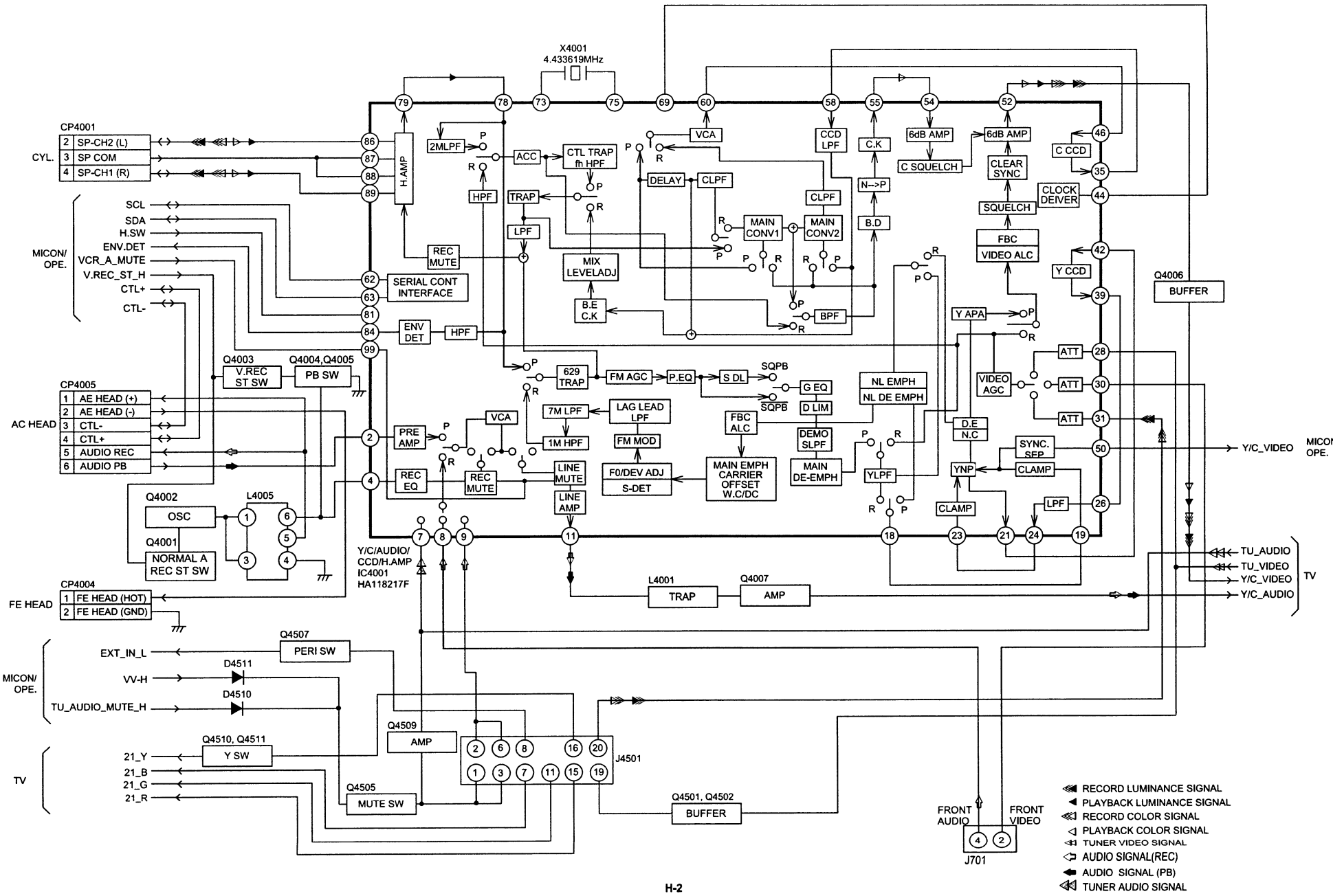
DTC114ESTP

GP1S566

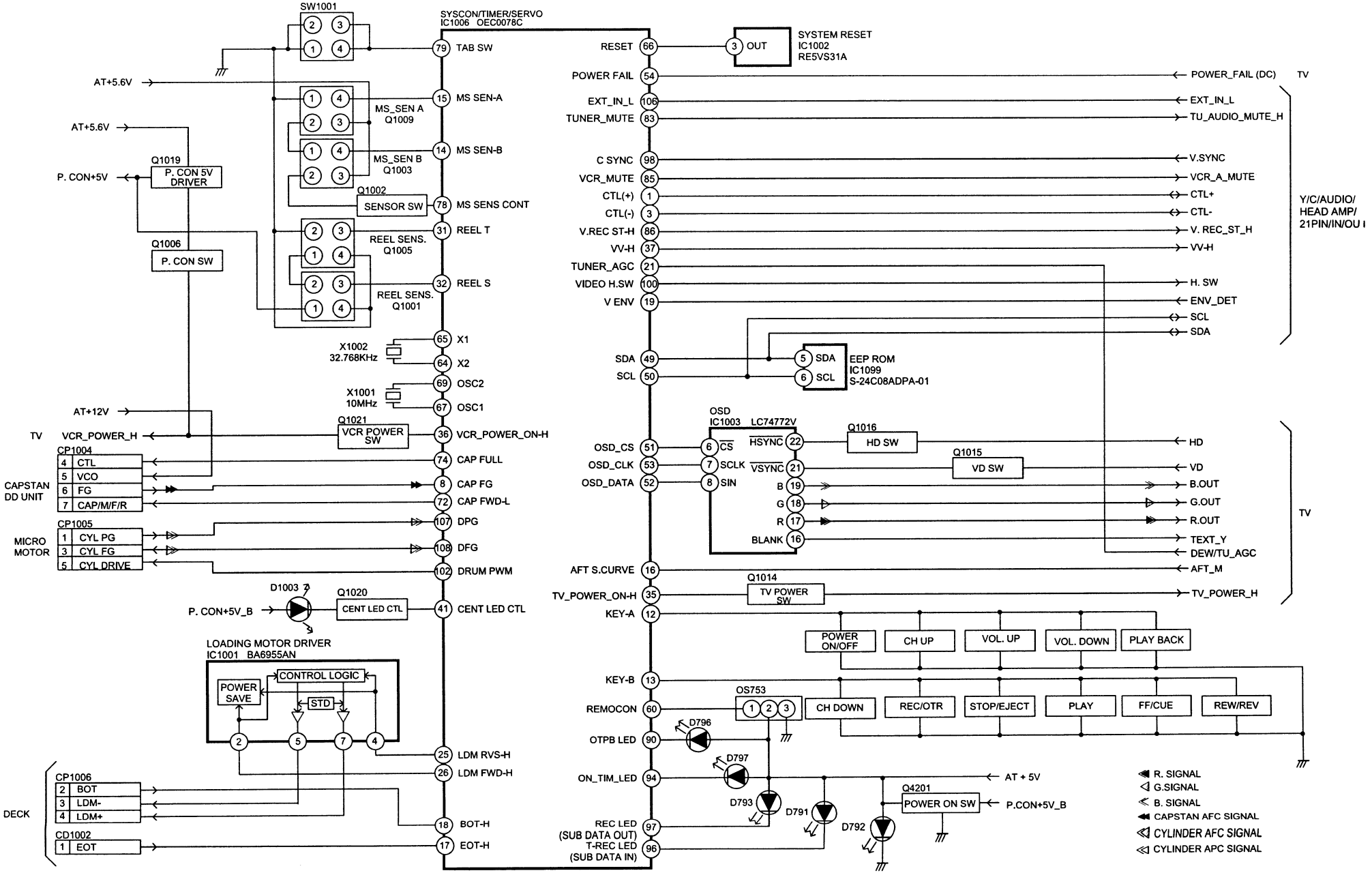
TV BLOCK DIAGRAM



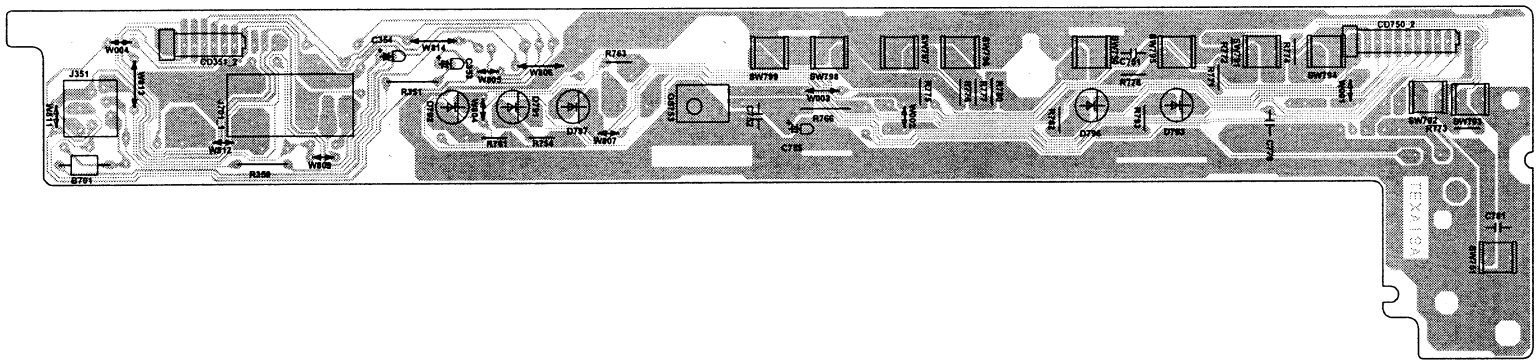
Y/C/AUDIO/HEAD AMP/21PIN/IN/OUT BLOCK DIAGRAM



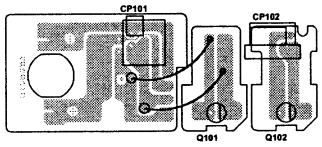
MICON/OPERATION BLOCK DIAGRAM



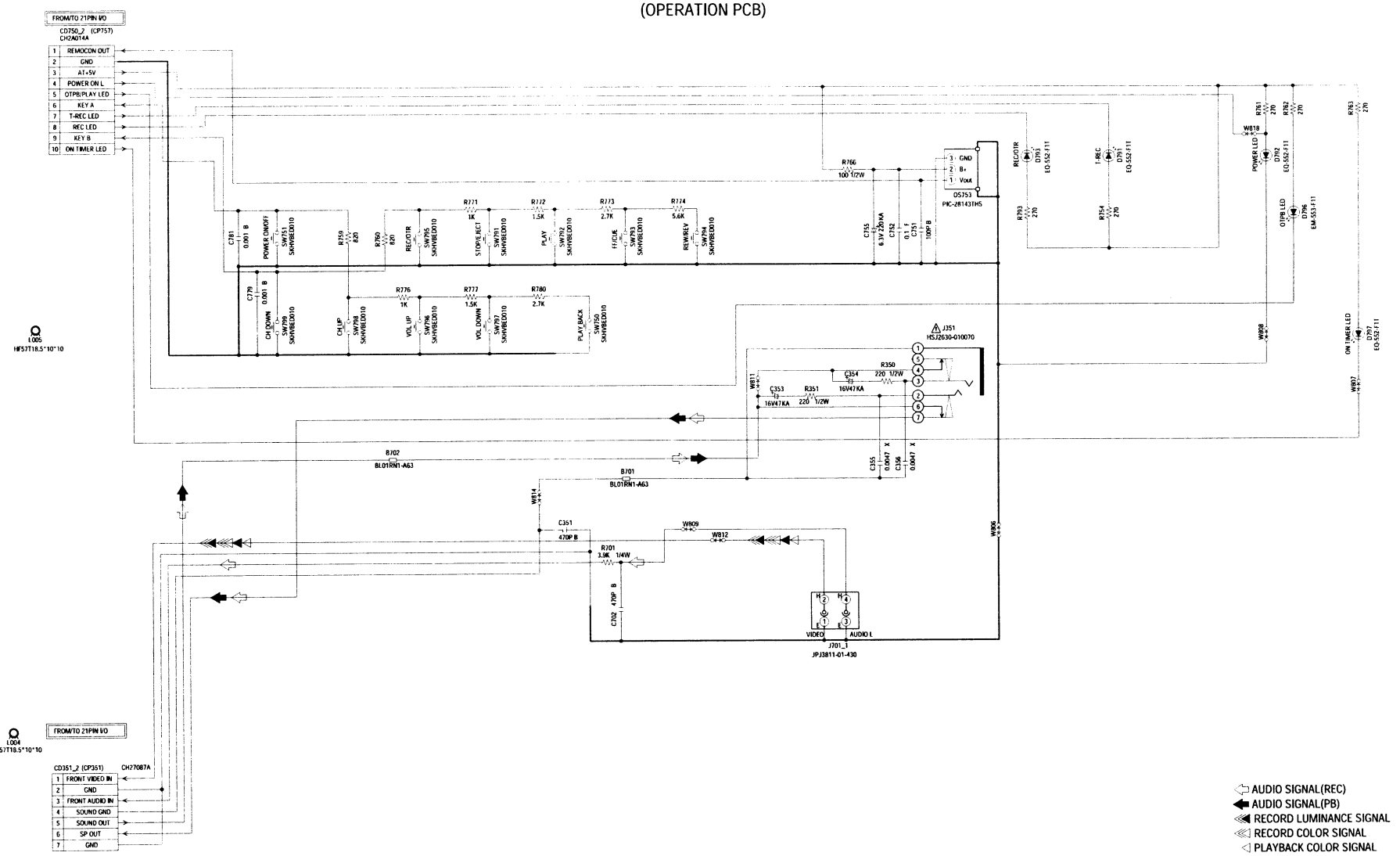
OPERATION
SOLDER SIDE



DECK
SOLDER SIDE



OPERATION SCHEMATIC DIAGRAM
(OPERATION PCB)



PCB030
TEXA19

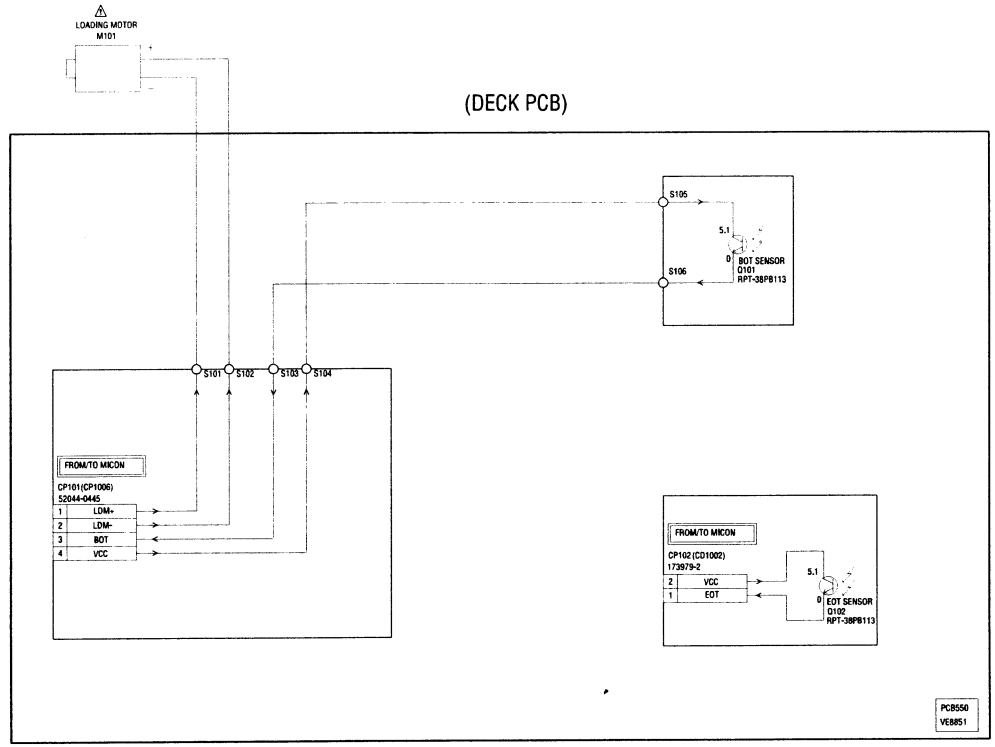
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

DECK SCHEMATIC DIAGRAM



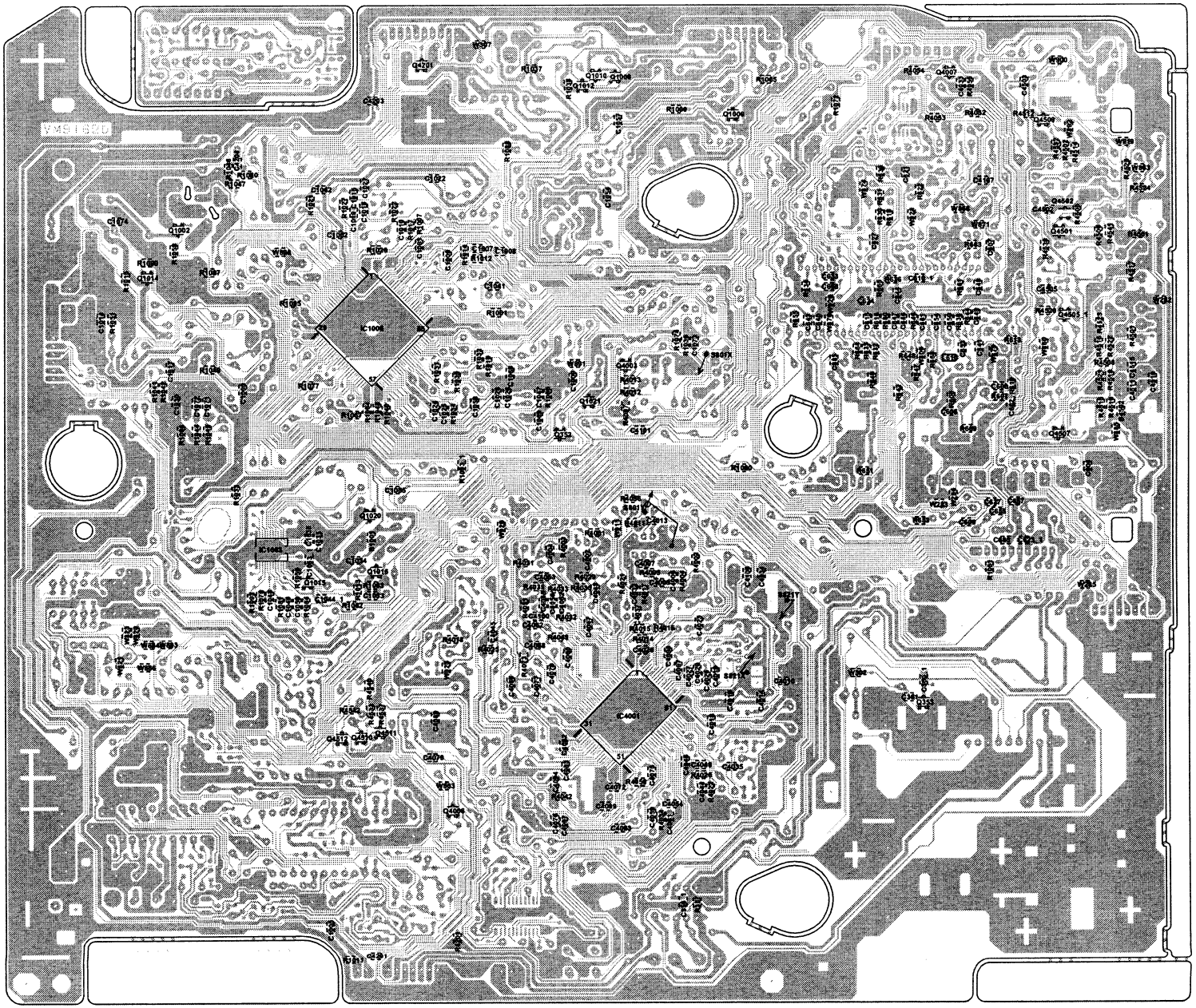
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY USE ONES DESCRIBED IN PARTS LIST ONLY .

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

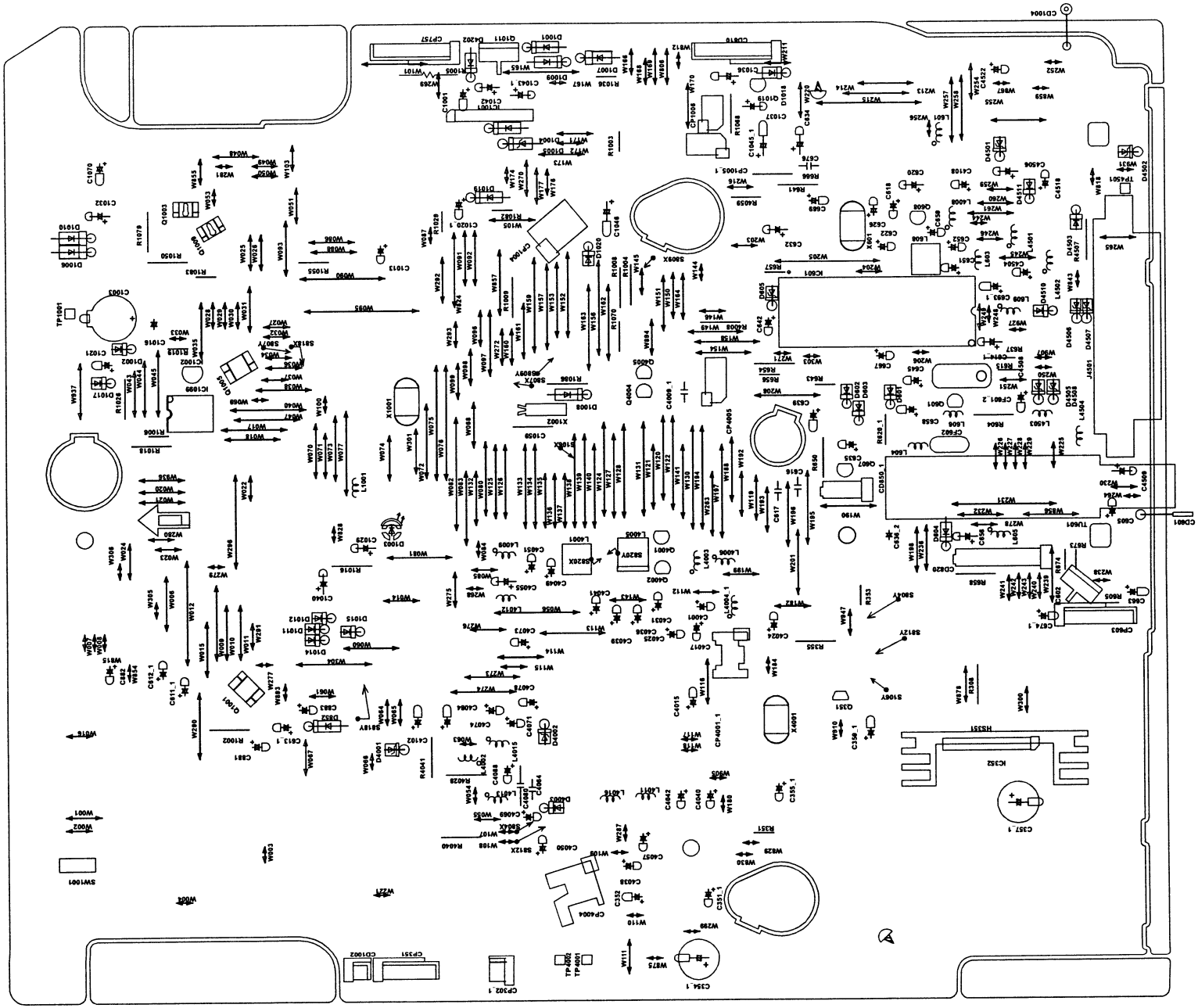
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

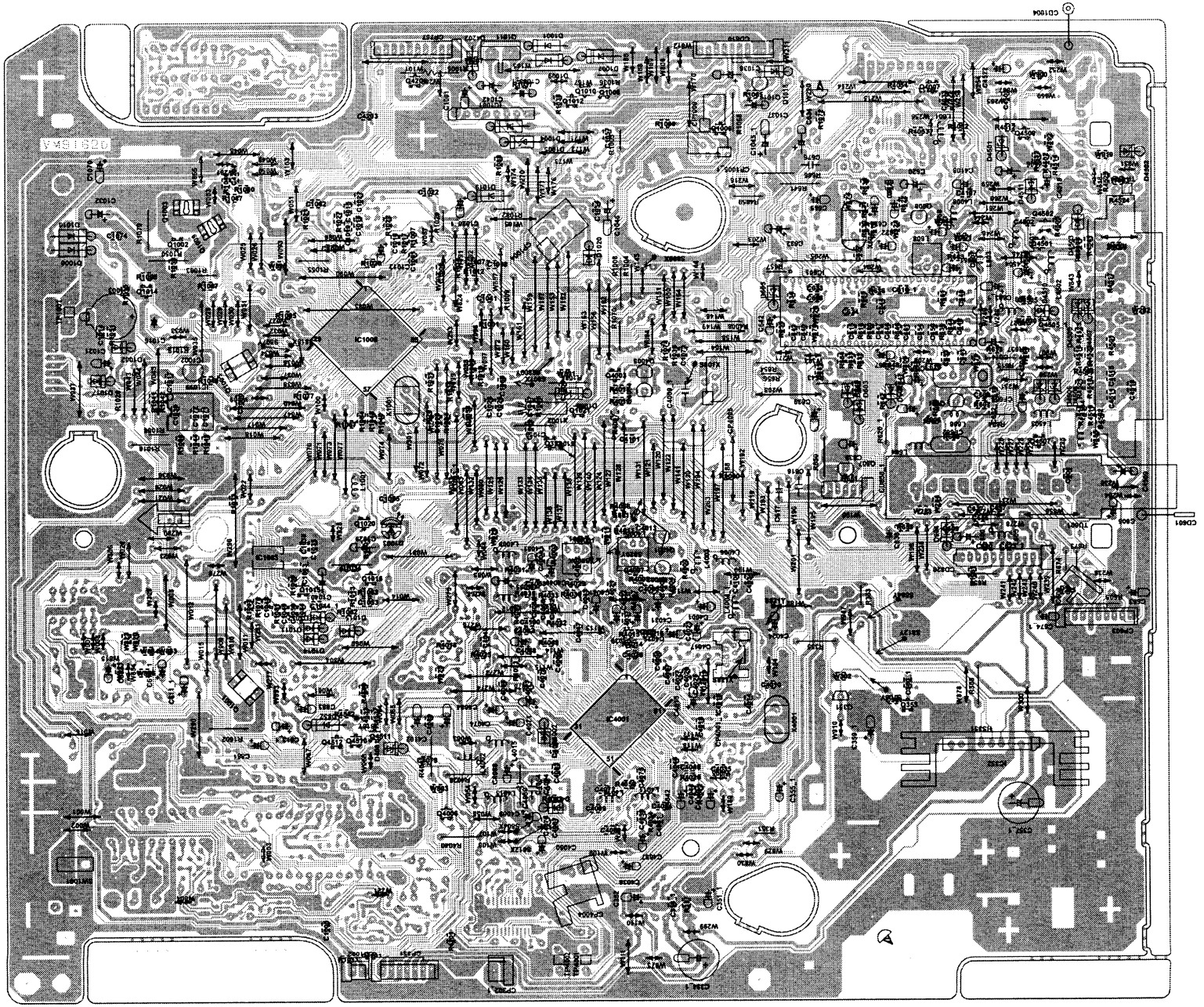
PRINTED CIRCUIT BOARDS
SYSCON



PRINTED CIRCUIT BOARDS
SYSCON

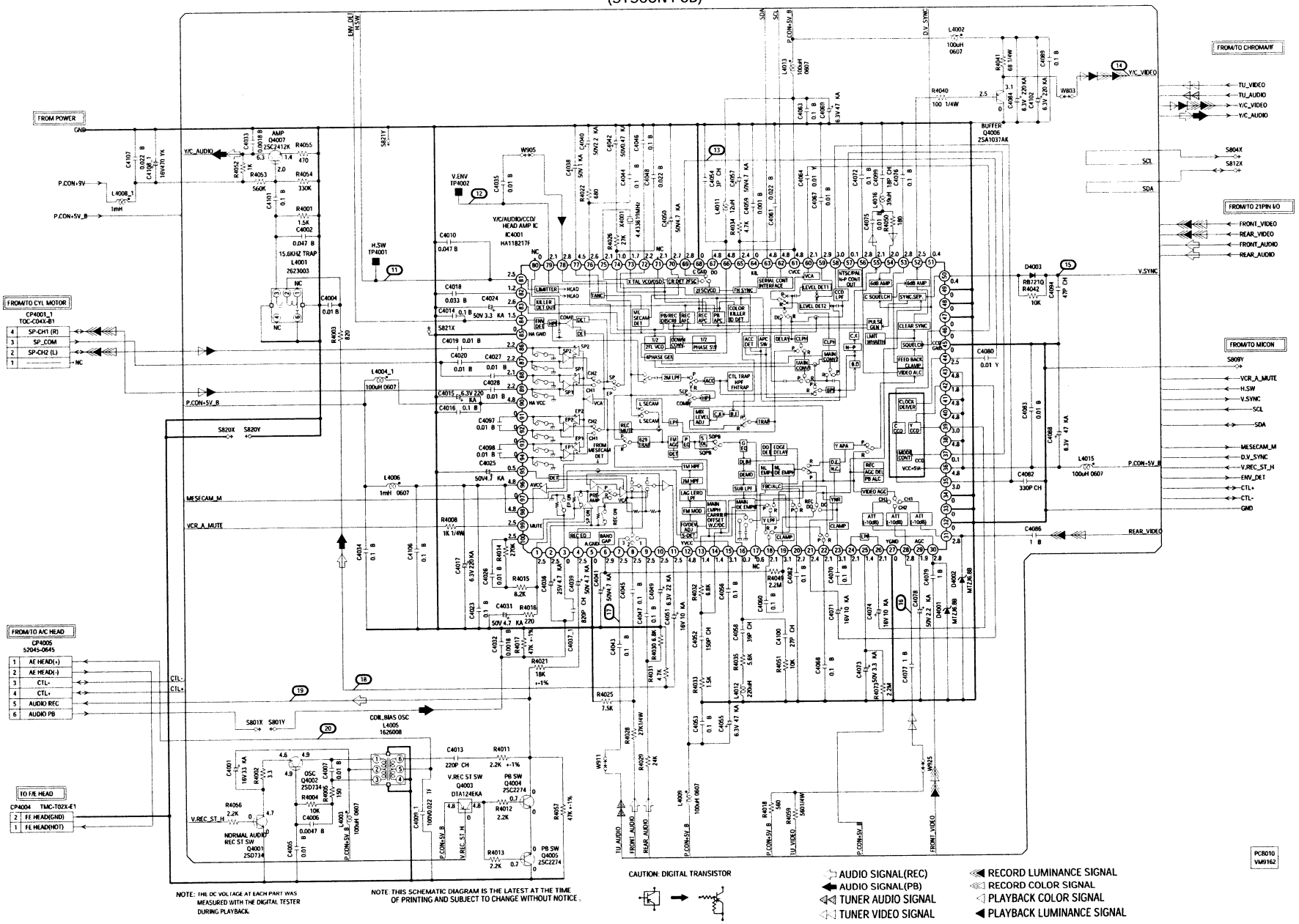


PRINTED CIRCUIT BOARDS
SYSCON

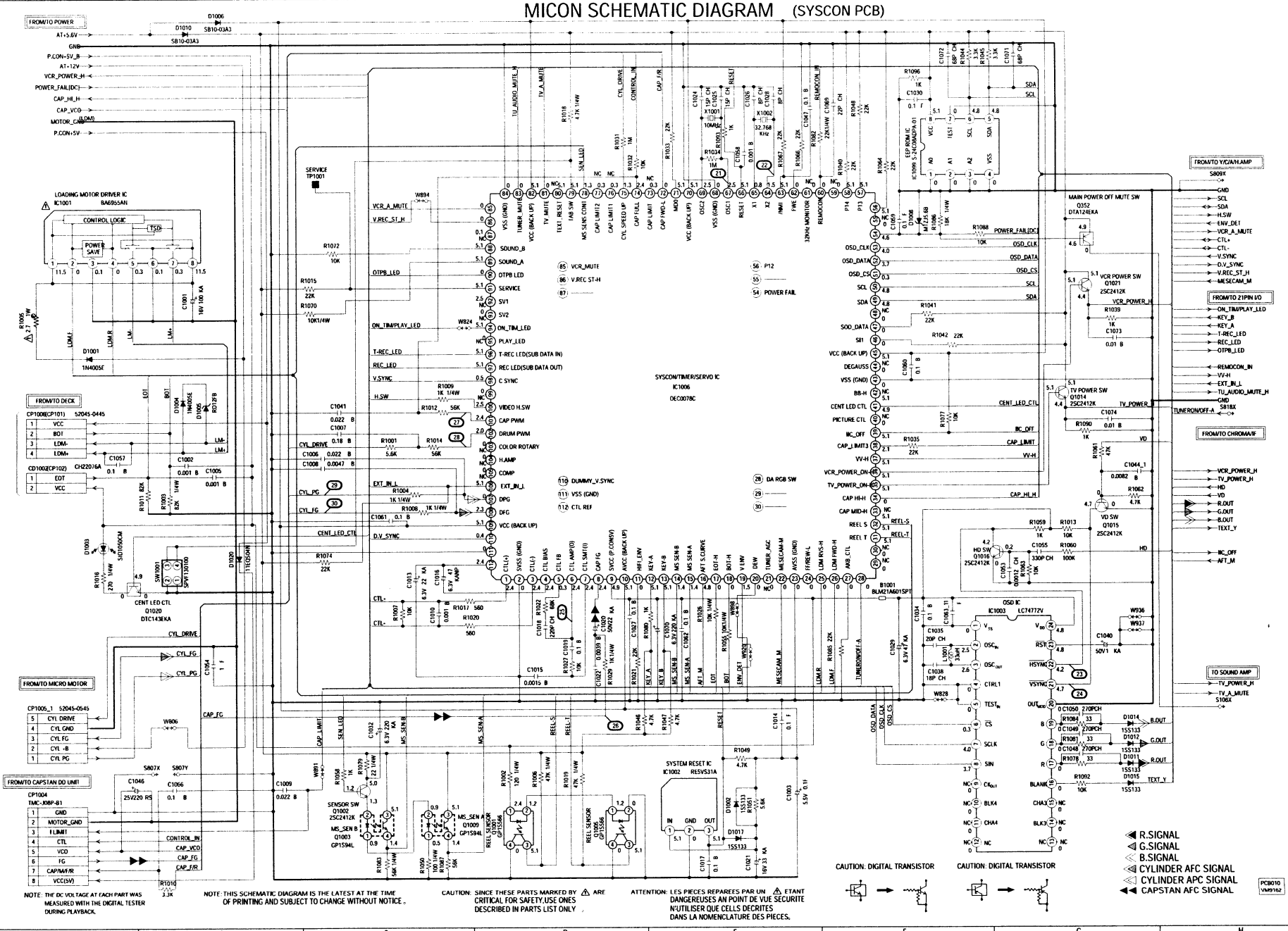


Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM

(SYSCON PCB)


FROM POWER
FROM/TO CYL MOTOR
FROM/TO A/C HEAD
TO F/E HEAD
FROM/TO CHROMA/IF
FROM/TO 21PIN I/O
FROM/TO MICON
Y/C AUDIO/CCD/ HEAD AMP IC
IC4001 HA118217F
BUFFER Q4006 2SA1037AK
AMP D4007 2SC2412K
V.ENV TP4002
H.SW TP4001
OSC Q4002 2SD734
NORMAL AUDIO REC ST SW Q4001 2SD734
V.REC ST SW Q4003 DTA124EKA
PB SW Q4004 2SC2274
PB SW Q4005 2SC2274
COIL BIAS OSC L4005 1626008
CAUTION: DIGITAL TRANSISTOR
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)
TUNER AUDIO SIGNAL
TUNER VIDEO SIGNAL
RECORD LUMINANCE SIGNAL
RECORD COLOR SIGNAL
PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.
PCB010 VM9162

MICON SCHEMATIC DIAGRAM (SYSCON PCB)



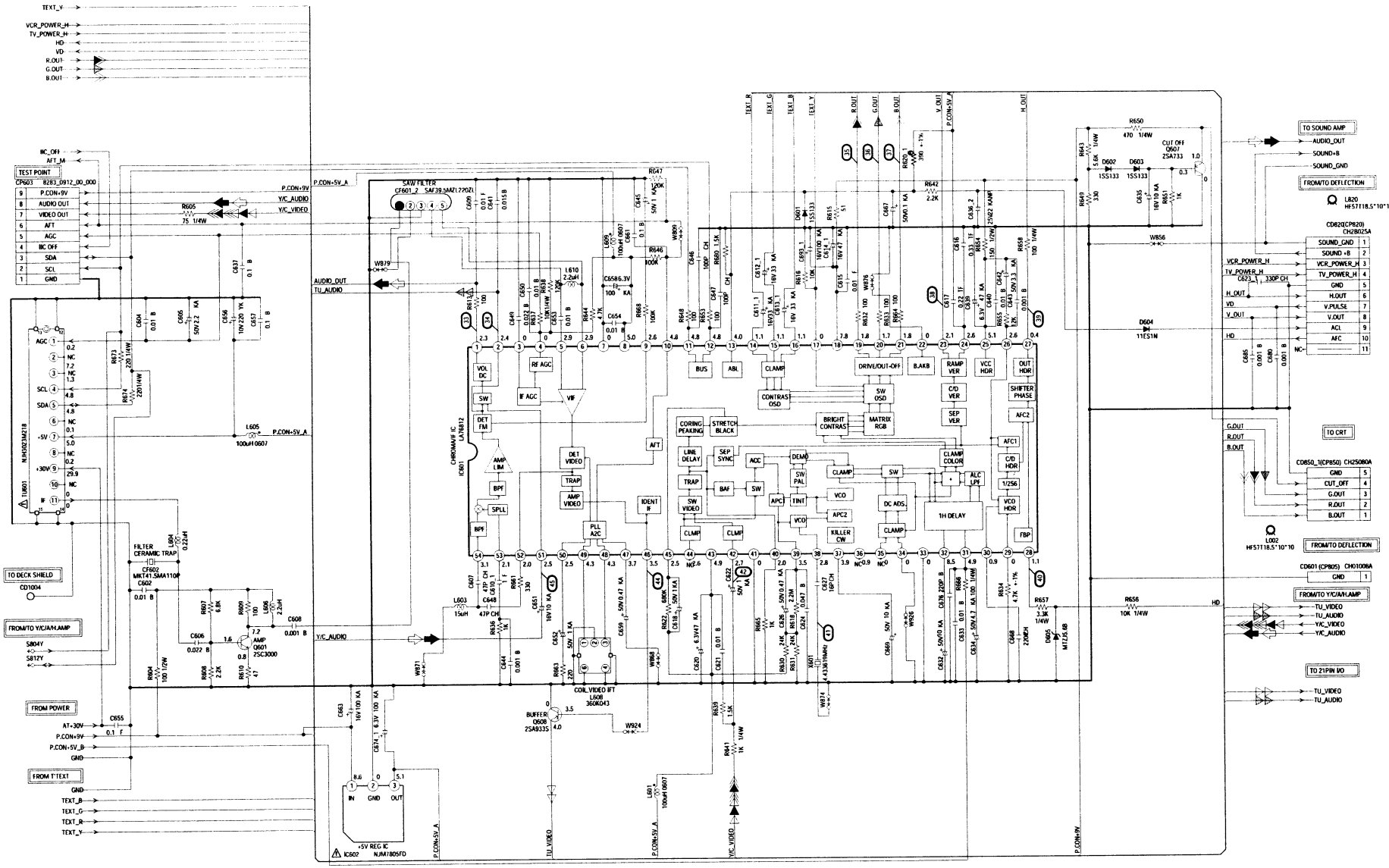
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

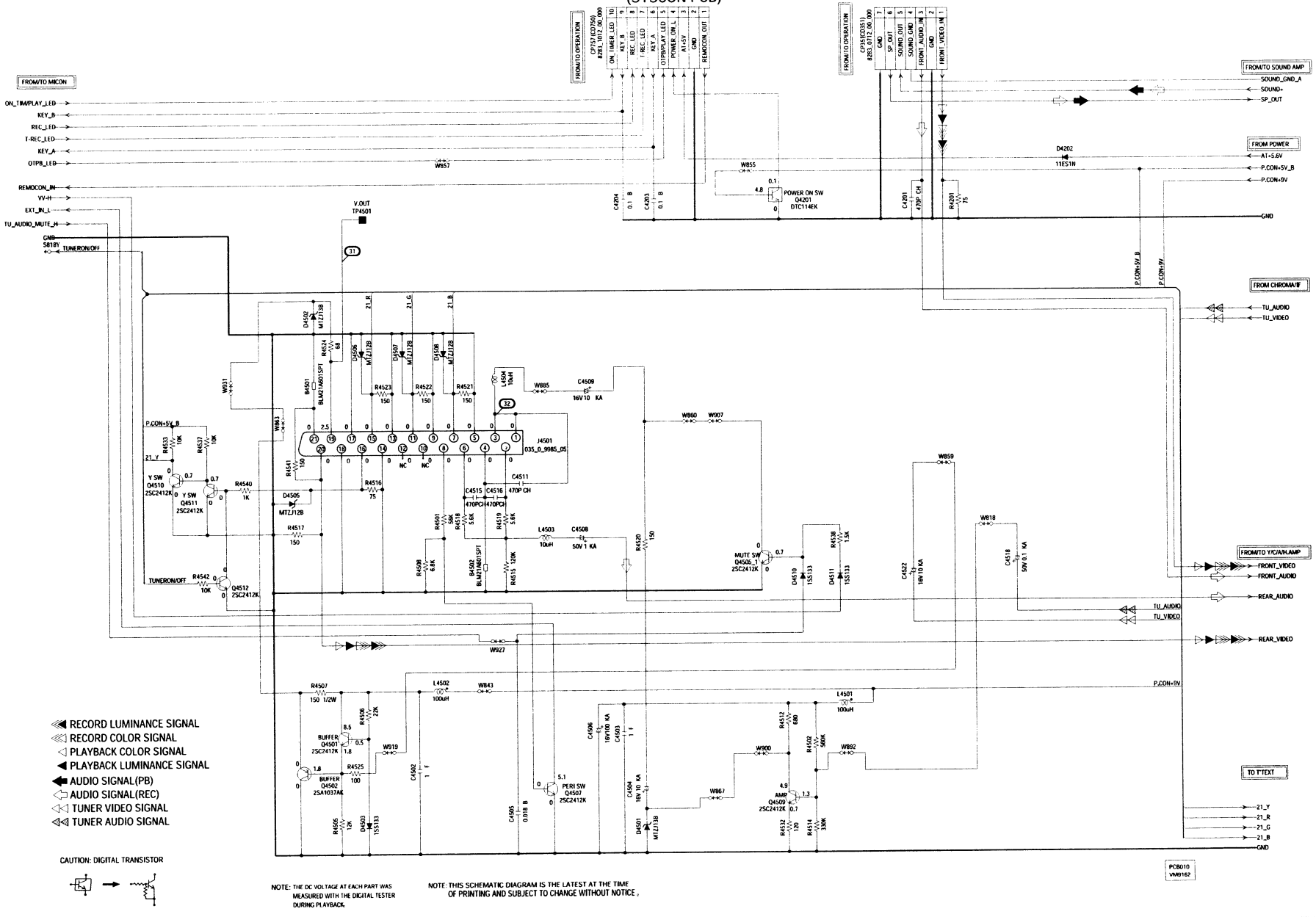
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CHROMA/IF SCHEMATIC DIAGRAM
(SYSCON PCB)

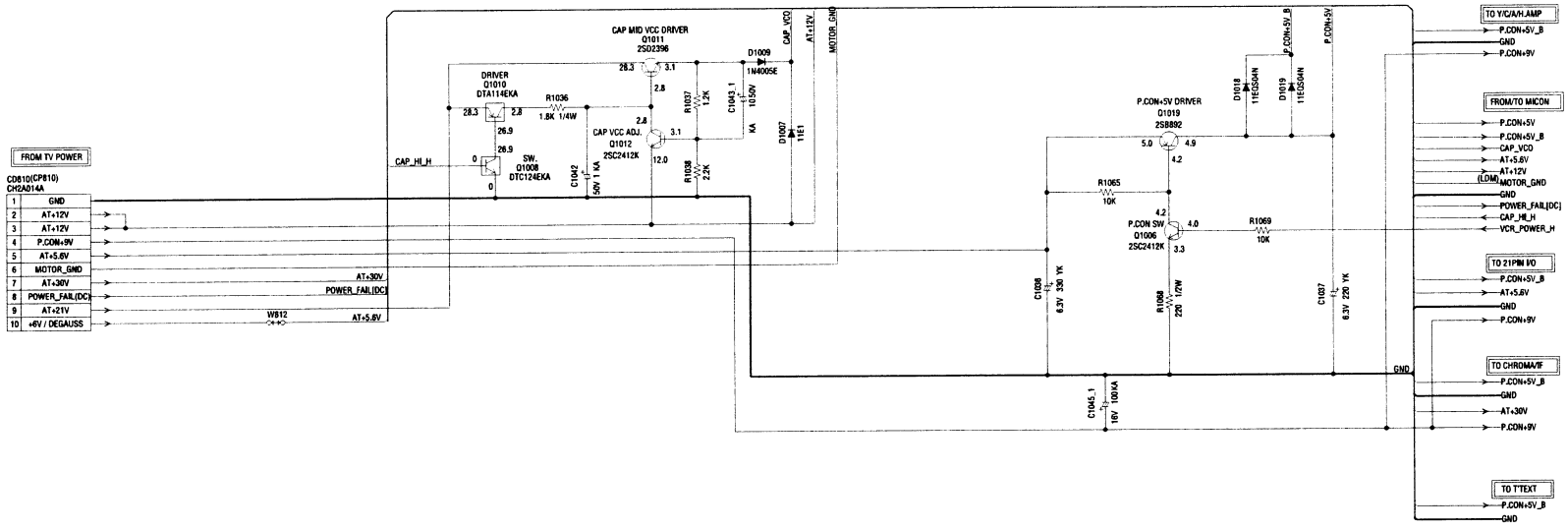


21PIN/IN/OUT SCHEMATIC DIAGRAM

(SYSCON PCB)



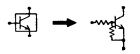
POWER SCHEMATIC DIAGRAM
(SYSCON PCB)



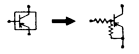
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR



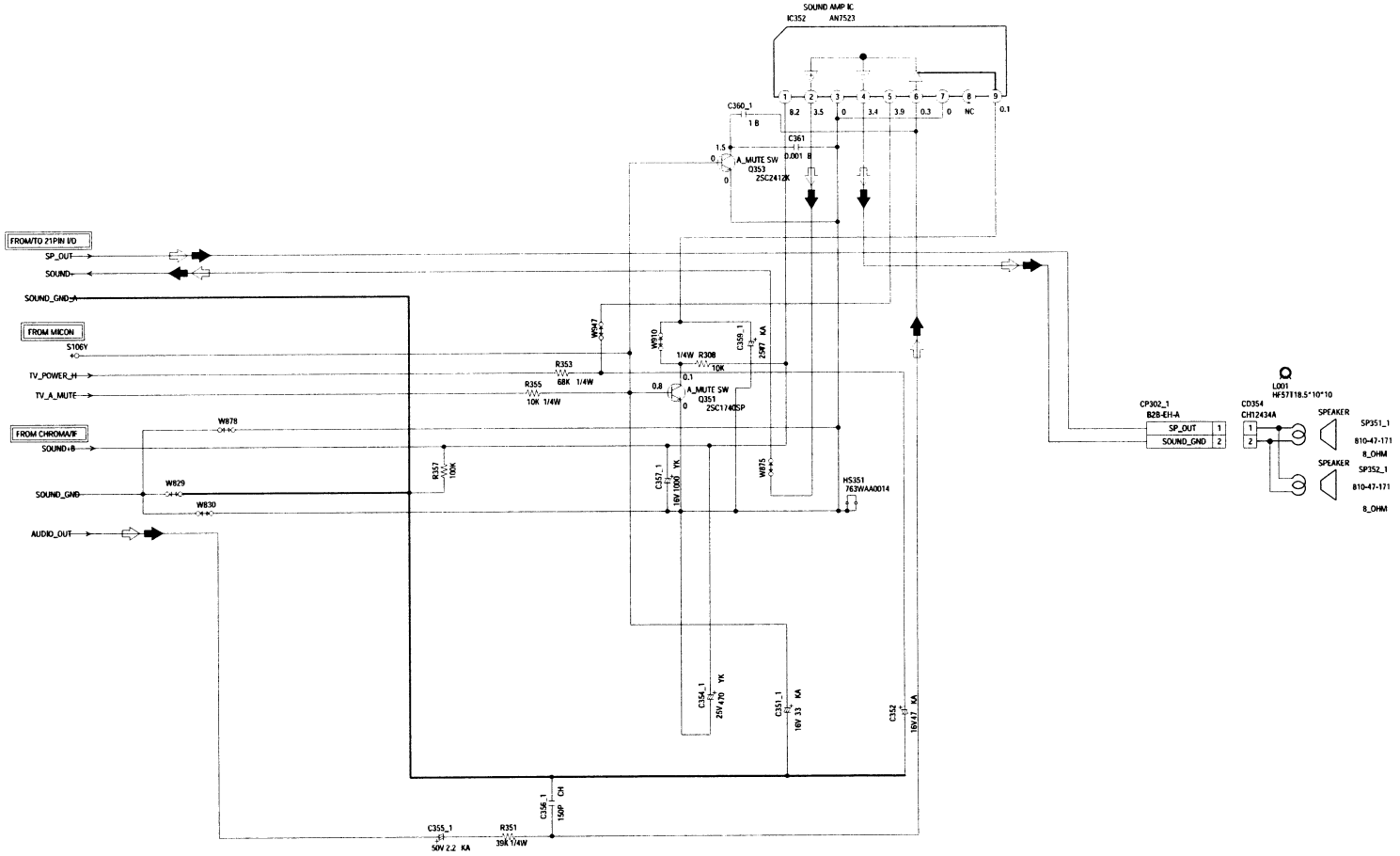
CAUTION: DIGITAL TRANSISTOR



PC8010
VM9162

SOUND AMP SCHEMATIC DIAGRAM

(SYSCON PCB)



PCB010
VM9162

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

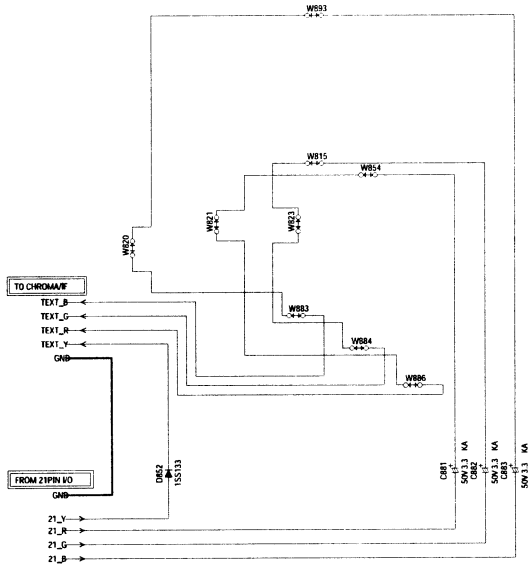
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

AUDIO SIGNAL(REC)

AUDIO SIGNAL(PB)

T'TEXT SCHEMATIC DIAGRAM
(SYSCON PCB)

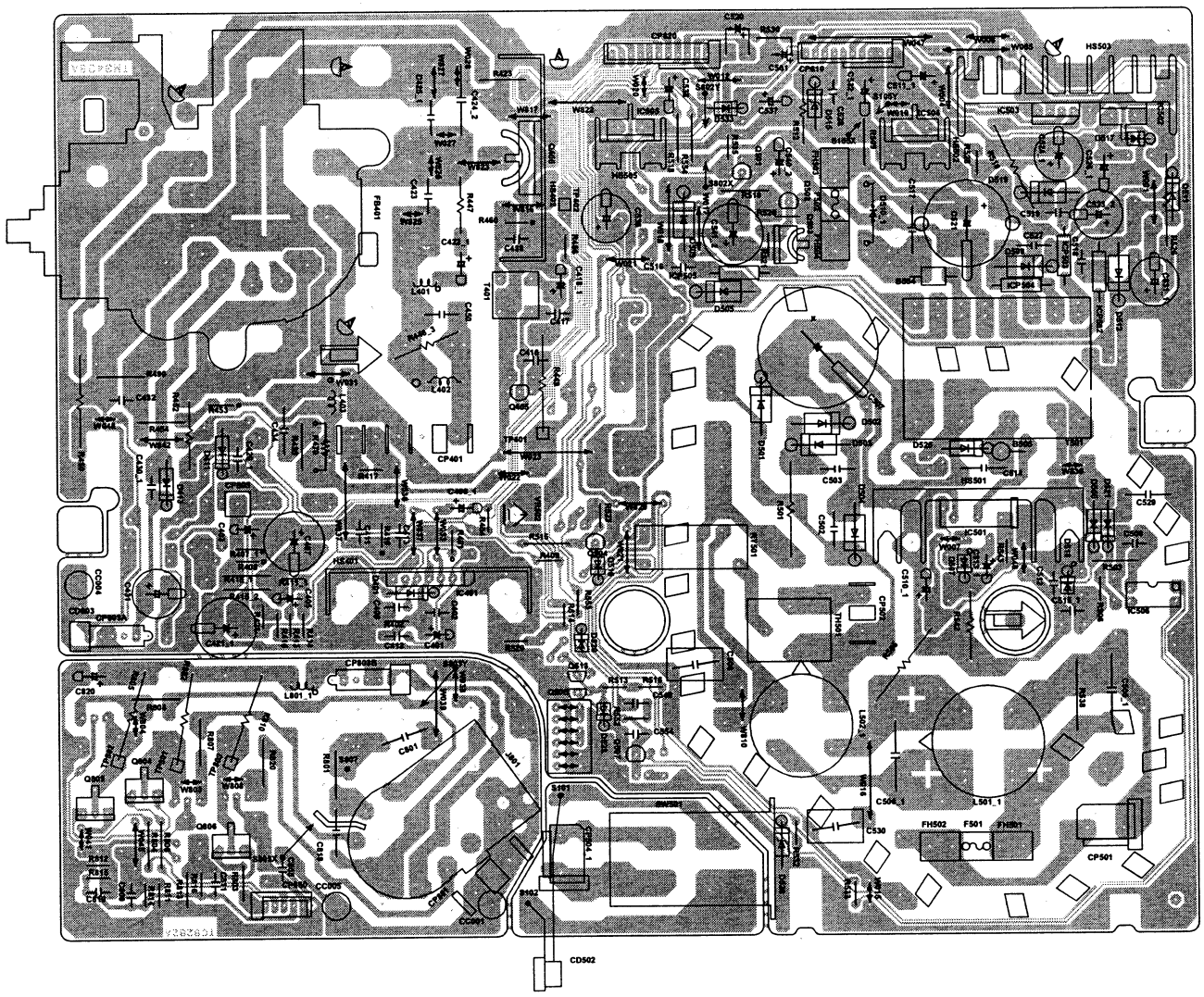


PCB010
VM9162

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

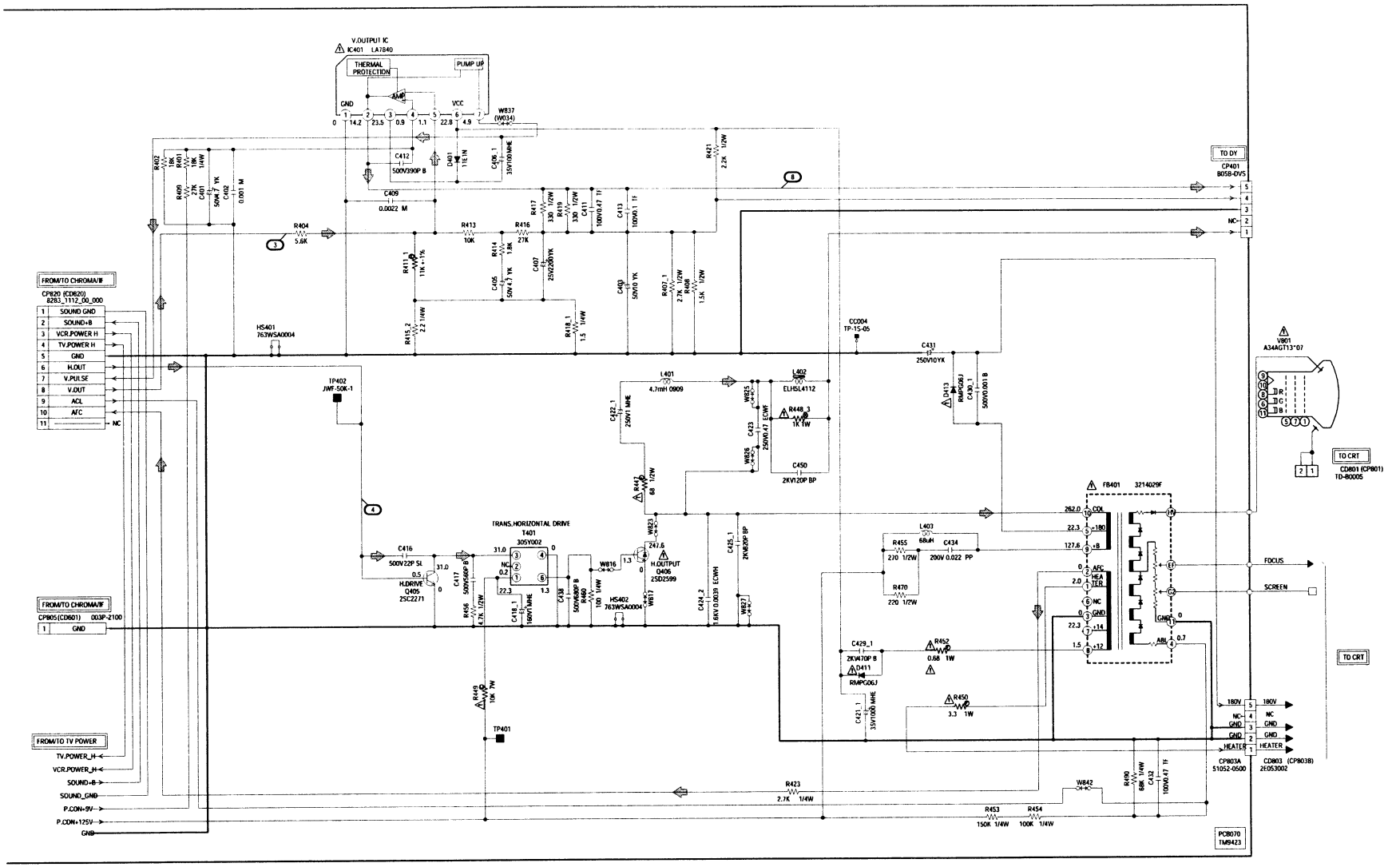
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

MAIN/CRT/POWER SW



DEFLECTION SCHEMATIC DIAGRAM

(MAIN PCB)



NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

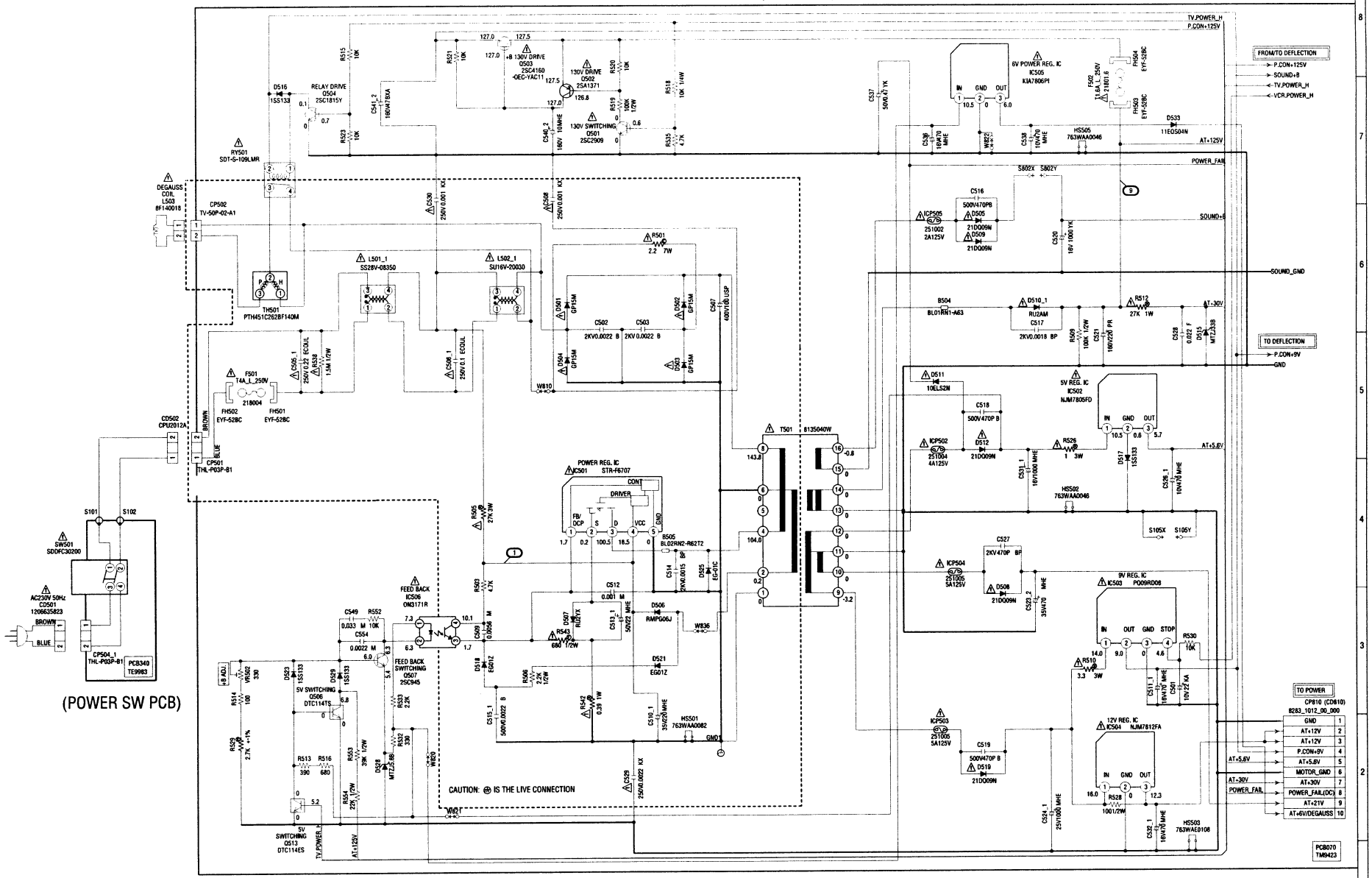
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

⇦ DEFLECTION SIGNAL

TV POWER SCHEMATIC DIAGRAM (MAIN PCB)



NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR.
THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

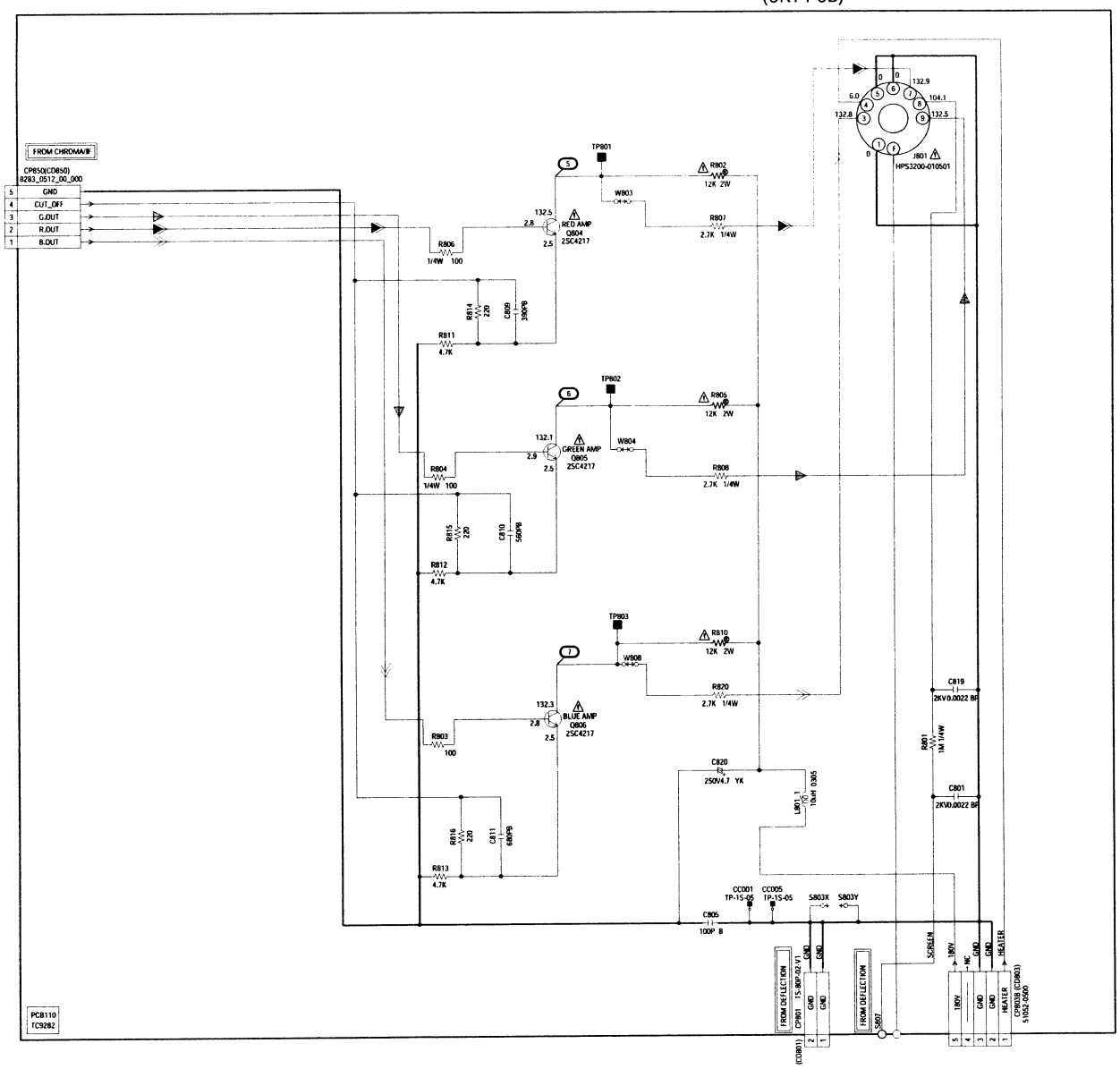
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

CAUTION: DIGITAL TRANSISTOR

CRT SCHEMATIC DIAGRAM

(CRT PCB)



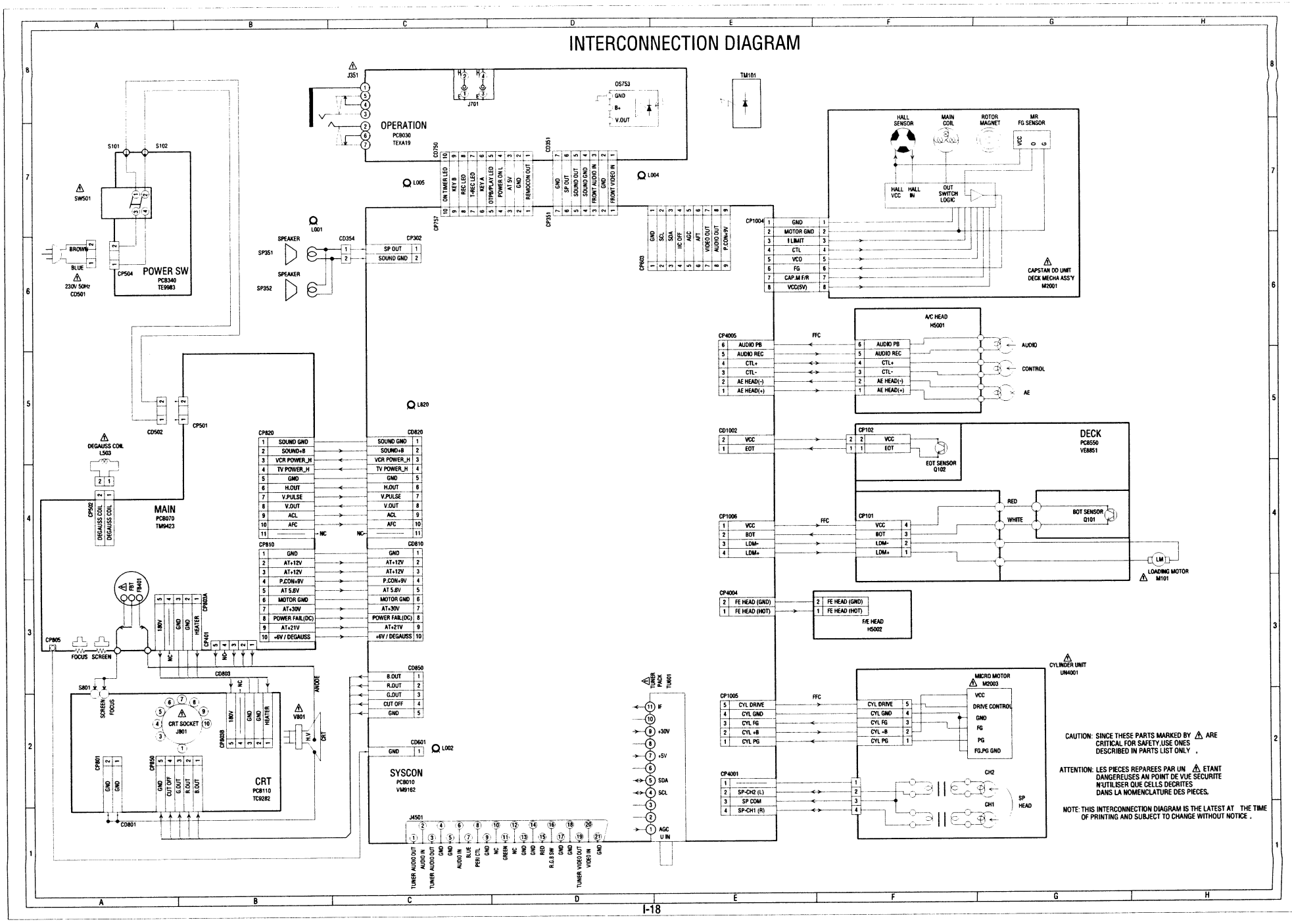
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

INTERCONNECTION DIAGRAM

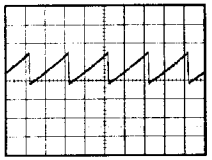


WAVEFORMS

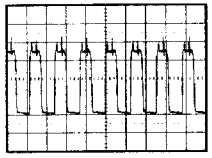
TV POWER

① 5V 0.1ms/div

DEFLECTION

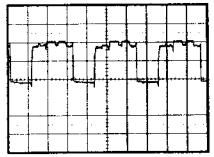


③ 0.5V 10ms/div

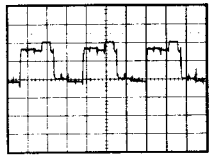


④ 200mV 50µs/div

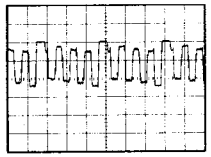
CRT



⑤ 2V 20µs/div

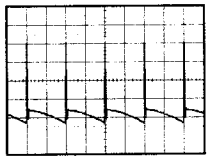


⑥ 20V 20µs/div



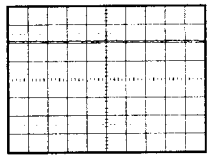
⑦ 20V 20µs/div

DEFLECTION



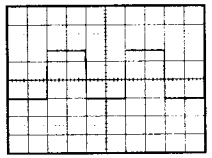
⑧ 10V 10ms/div

TV POWER

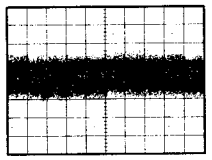


⑨ 20V 10ms/div

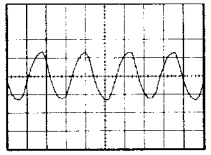
Y/C/AUDIO/HEAD AMP



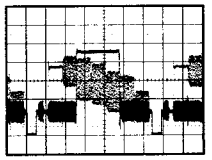
⑪ PB
2V 10ms/div



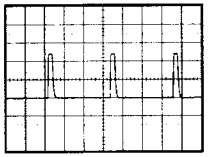
⑫ PB
10mV 5ms/div



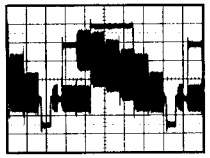
⑬ POWER ON
200mV 50ns/div



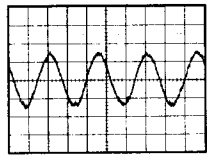
⑭ POWER ON
0.5V 10µs/div



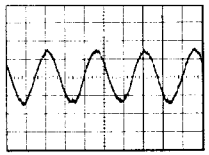
⑮ POWER ON
2V 20µs/div



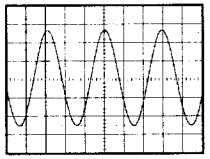
⑯ POWER ON
200mV 10µs/div



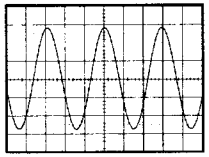
⑰ POWER ON
50mV 1ms/div



⑱ POWER ON
50mV 1ms/div

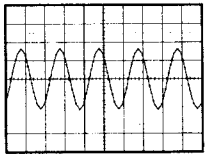


⑲ REC
0.5V 5µs/div

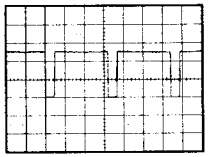


⑳ REC
10V 5µs/div

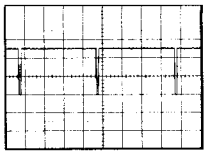
MICON



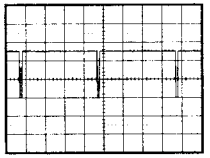
㉑ POWER ON
1V 50ns/div



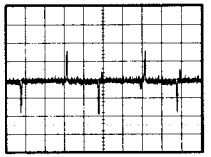
㉒ POWER ON
1V 20µs/div



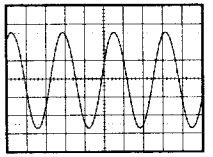
㉓ POWER ON
2V 20µs/div



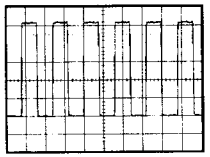
㉔ POWER ON
2V 5ms/div



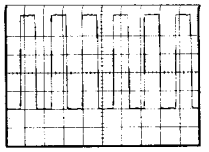
㉕ PB
50mV 10ms/div



㉖ PB
50mV 0.5ms/div

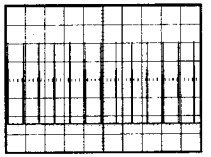


㉗ PB
1V 0.5µs/div



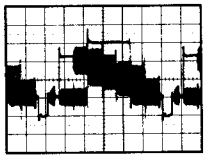
㉘ PB
1V 0.5µs/div

㉙ PB
2V 20µs/div

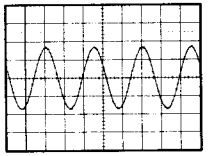


㉚ PB
1V 50ms/div

21PIN/IN/OUT



㉛ POWER ON
0.5V 10µs/div

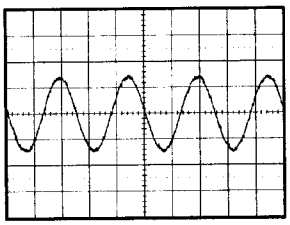


㉜ POWER ON
20mV 1ms/div

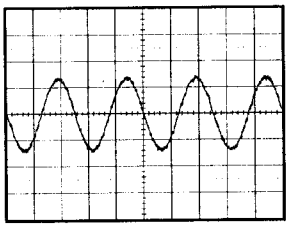
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

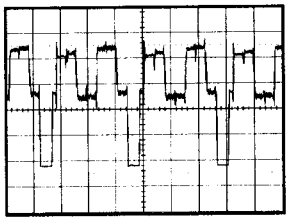
CHROMA/IF



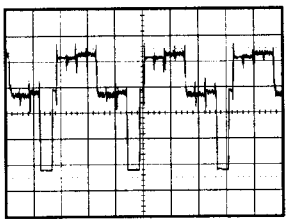
(33) POWER ON
5mV 1ms/div



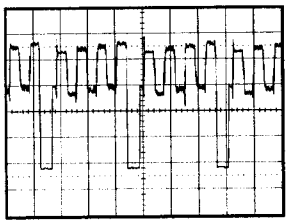
(34) POWER ON
5mV 1ms/div



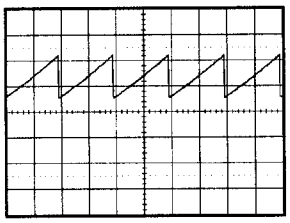
(35) POWER ON
0.5V 20μs/div



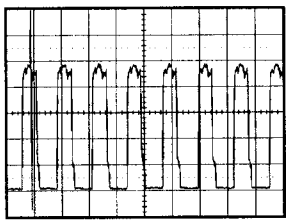
(36) POWER ON
0.5V 20μs/div



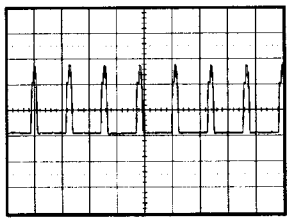
(37) POWER ON
0.5V 20μs/div



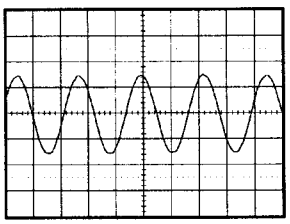
(38) POWER ON
0.5V 10ms/div



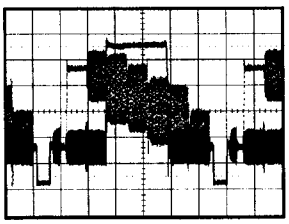
(39) POWER ON
200mV 50μs/div



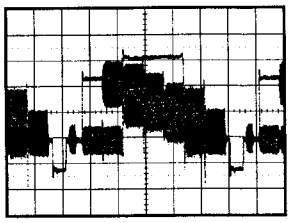
(40) POWER ON
2V 50μs/div



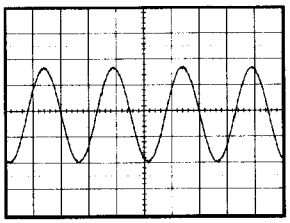
(41) POWER ON
200mV 0.1μs/div



(42) POWER ON
200mV 10μs/div



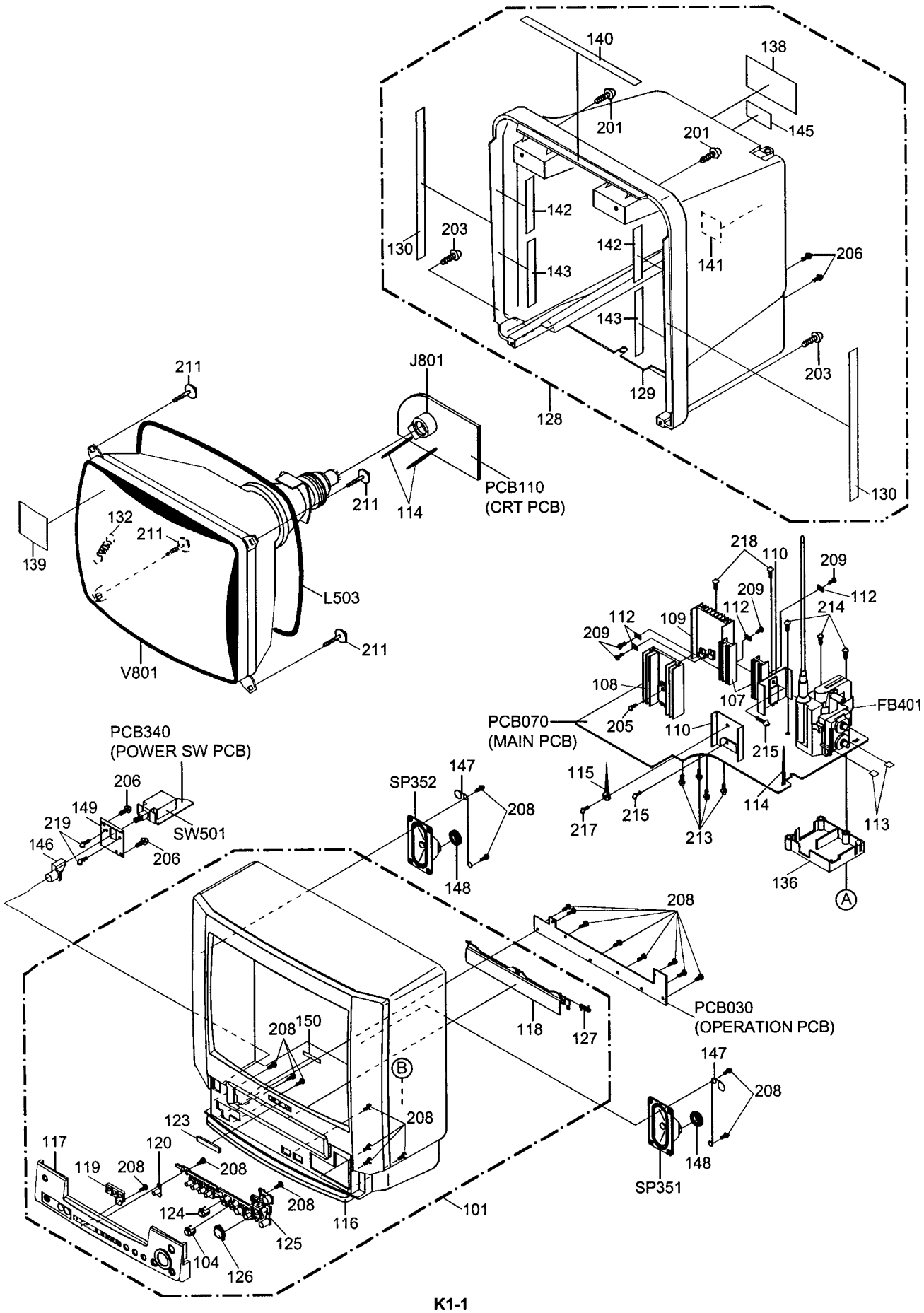
(44) POWER ON
0.5V 10μs/div



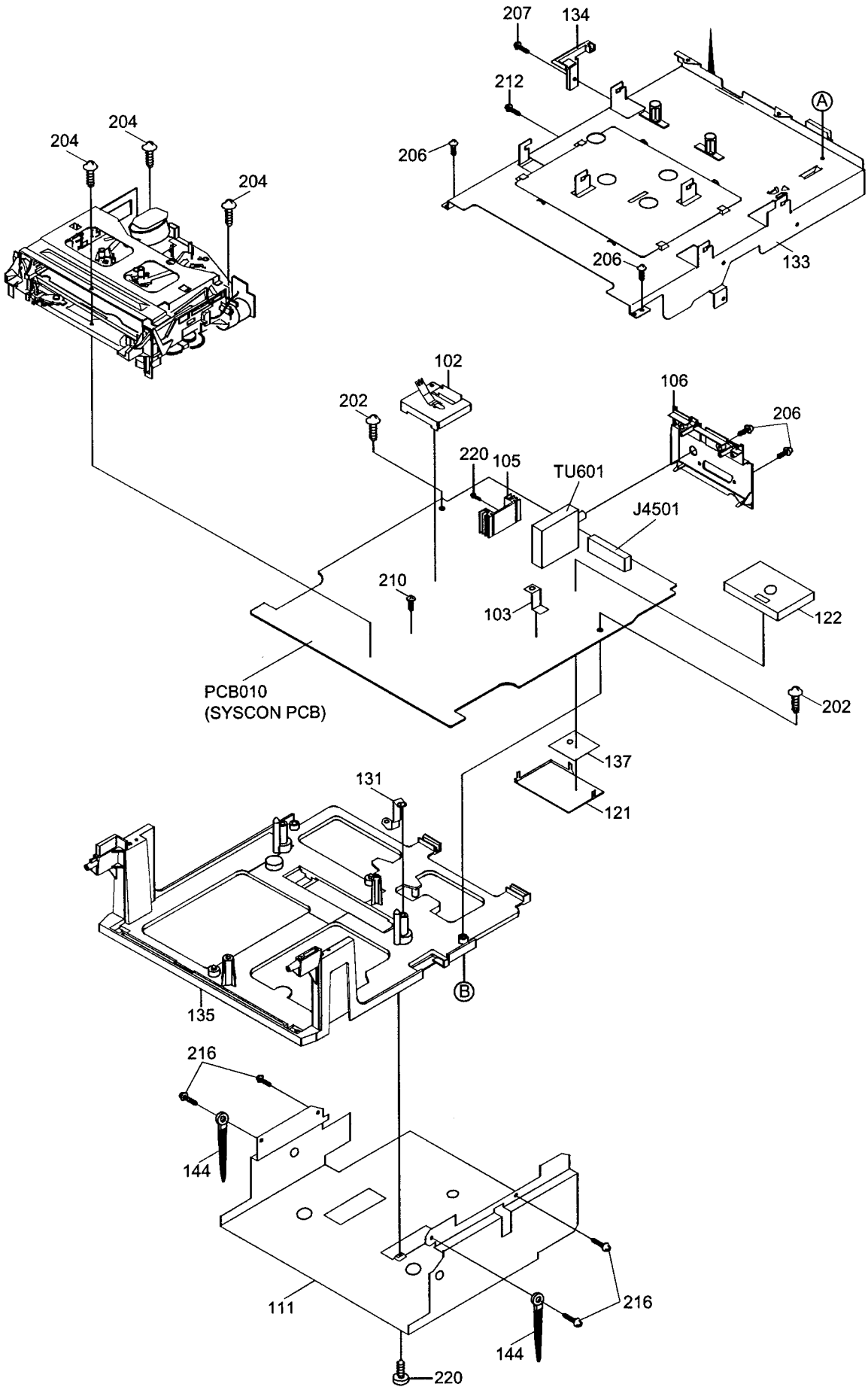
(45) POWER ON
200mV 1ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



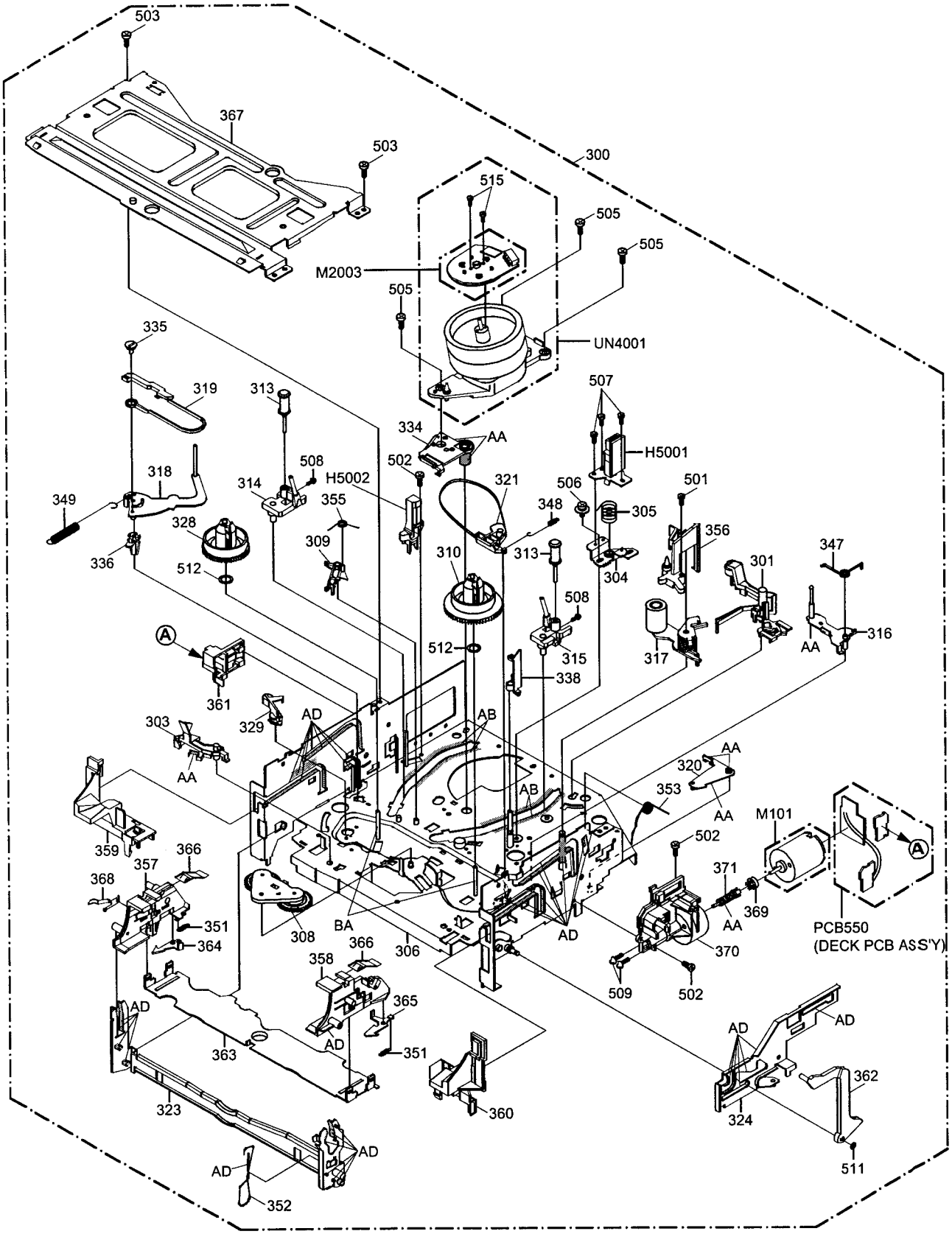
MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
101	S5-455-3M7-200	CAB,FRONT ASS'Y	1
102	----	SHIELD,CASE HEAD AMP ASS'Y	1
103	----	PLATE,EARTH-SYSCON	1
104	S3-5WP-D06-800	BUTTON,REC	1
105	----	HEAT SINK	1
106	S7-1WP-A02-430	PLATE,JACK	1
107	----	HEAT SINK	2
108	----	HEAT SINK	1
109	----	HEAT SINK	1
110	----	HEAT SINK	2
111	----	PLATE,SHIELD BOTTOM	1
112	----	METAL SPACER	4
113	----	RUBBER,SILCON	2
114	----	COATING CLIP	3
115	----	CORD CLIP UL CO.	1
116	----	CAB,FRONT	1
117	S3-5WP-J01-400	PLATE,FRONT	1
118	S1-2WP-J06-820	FLAP	1
119	S1-3WP-A01-110	GLASS,LED	1
120	S1-3WP-A01-100	GUIDE,REMOCON	1
121	----	SHIELD,COVER	1
122	----	SHILED,CASE	1
123	S2-344-901-020	BADGE,BRAND	1
124	S3-5WP-D06-790	BUTTON,OTPB	1
125	S3-5WP-J01-280	BUTTON,FRAME	1
126	S3-5WP-D06-780	BUTTON,PLAY	1
127	S4-3WK-A00-320	SPR,FLAP	1
128	S5-455-3M7-400	CAB,BACK ASS'Y	1
129	----	CAB,BACK	1
130	----	FELT SHEET	2
131	S5-3WS-A01-200	PLATE,BOTTOM-EARTH	1
132	S4-1WU-A00-230	SPRING,EARTH	1
133	----	PLATE,DECK SHIELD ASS'Y	1
134	S6-1WP-AA0-180	HOLDER,M PCB	1
135	S6-1WP-A01-570	HOLDER,DECK	1
136	S6-1WP-A01-500	HOLDER,FBT	1
137	----	SHEET,PVC	1
138	----	SHEET,RATING	1
139	----	LABEL,POP	1
140	----	FELT SHEET	1
141	----	FELT SHEET	1
142	----	FELT SHEET	2
143	----	FELT SHEET	2
144	----	COATING CLIP EFB0692	2
145	----	LABEL,ANTI-THEFT	1
146	S3-5WP-B00-440	BUTTON,POWER	1
147	----	WIRE,SPEAKER	2
148	----	RUBBER,SPEAKER	2
149	S5-2WS-A01-990	PLATE,POWER SW	1
150	----	FELT SHEET	1
201	S1-172-40C-540	SCREW,TAPPING(B0) BIND 4x35	2
202	S1-175-40B-040	SCREW,TAP(B0)TRUSS 4-20	2
203	S1-175-40A-640	TAP(B0)4-16	2
204	S1-171-40A-240	TAP(B0)V+4-12	3
205	S1-0A1-30A-040	SCREW/WASHER(B)M3-10	1
206	S1-106-30A-240	SCREW,TAP(P)3-12	8
207	S1-072-308-040	UT2+3-8	1
208	S1-106-30A-040	UIT+3-10	22
209	S1-0A1-30A-040	SCREW,WASHER(A)M3-10	4
210	87-741-095-410	SCREW,TAP TITE(P) FLAT 3-8	1
211	S1-21F-50B-840	SCREW,TAP 5-28	4
212	87-743-073-010	VT2+2.6-6	1
213	87-753-095-410	SCREW,TAP 3-8	4
214	S1-0A1-30B-040	SCREW,WASHER(A)M3-20	3
215	S1-0B1-308-040	SCREW/WASHER(B)M3-8	2
216	S1-076-306-040	BVTT+3-6	4
217	S1-0A1-308-040	WASHER(A)M3-8	1
218	S1-0A1-306-040	SCREW,WASHER(A)M3-6	2
219	S1-0A1-305-040	SCREW,WASHER(A) M3-5	2
220	S1-106-306-040	UIT+3-6	2

ACCESSORY REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
1	S7-6R0-DF0-100	TRANSMITTER,R25-1396	1
2	S5-455-301-000	INSTRUC BOOK(VXG143K)	1

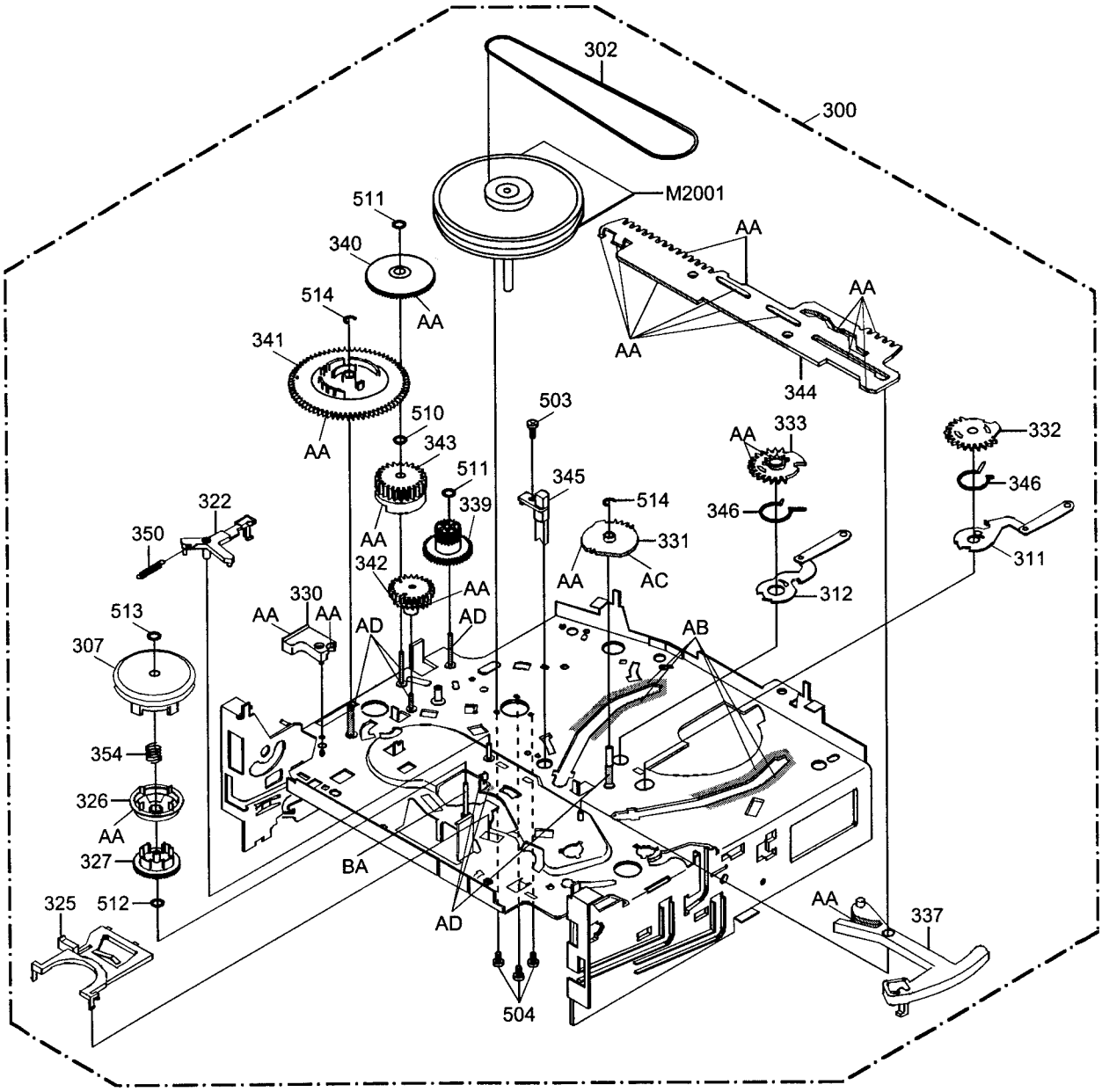
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	KYODO OIL SLIDAS No. 150	BA

NOTE: Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	G-488M	AB
	FL-721	AC
	MG-33	AD
OIL	KYODO OIL SLIDAS No. 150	BA

NOTE: Applying positions AA, AB, AC, AD and BA for the grease or oil are displayed for this section. Check if the correct grease or oil is applied for each position.

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	Q'TY
300	----	DECK ASS'Y A54508M420A	1
301	S5-OA5-000-220	AHC ASS'Y	1
302	S5-OP2-002-700	BELT,CAPSTAN	1
303	S5-OP9-007-100	LEVER,REC	1
304	S5-OP5-000-830	BASE,AC HEAD	1
305	S5-OP8-003-240	SPR,AC HEAD	1
306	S5-OA0-003-600	MAIN CHASSIS ASS'Y	1
307	S5-OA2-000-810	CLUTCH ASS'Y X	1
308	S5-OA2-000-730	ARM,IDLER ASS'Y	1
309	S5-OP6-005-530	ARM,S-S BRAKE	1
310	S5-OA2-000-760	T REEL ASS'Y	1
311	S5-OA3-000-610	LOAD ARM S ASS'Y	1
312	S5-OA3-000-620	LOAD ARM T ASS'Y	1
313	S5-OA4-002-100	GUIDE ROLLER ASS'Y	2
314	S5-OA4-001-880	BASE,INCL S ASS'Y	1
315	S5-OA4-001-960	BASE,INCL T(S) ASS'Y	1
316	S5-OA4-001-970	P5-3 ARM ASS'Y	1
317	S5-OA4-002-050	PINCH ROLLER BLOCK	1
318	S5-OA4-001-750	TENSION ARM ASS'Y	1
319	S5-OA4-001-760	TENSION BAND ASS'Y	1
320	S5-OA4-001-780	PINCH ROLLER LEVER ASS'Y	1
321	S5-OA6-001-820	BRAKE T ASS'Y	1
322	S5-OA6-001-830	CAP BRAKE ARM ASS'Y	1
323	S5-OA9-002-130	LINK ASS'Y	1
324	S5-OA9-002-160	LINK LEVER ASS'Y	1
325	S5-OP2-002-610	LEVER,CLUTCH	1
326	S5-OP2-002-620	RING,CLUTCH	1
327	S5-OP2-002-630	GEAR,CLUTCH	1
328	S5-OP2-002-710	REEL,S	1
329	S5-OP2-002-730	STOPPER,REEL S	1
330	S5-OP2-002-740	SPACER,LINK LEVER	1
331	S5-OP3-001-780	GEAR,MAIN LOADING	1
332	S5-OP3-001-790	GEAR,LOADING S	1
333	S5-OP3-001-800	GEAR,LOADING T	1
334	S5-OP3-001-860	HOLDER,LOADING GEAR	1
335	S5-OP4-004-720	ADJUST,TENSION	1
336	S5-OP4-004-920	HOLDER,TENSION	1
337	S5-OP4-004-900	LEVER,TENSION	1
338	S5-OP4-004-750	COVER,P4	1
339	S5-OP6-005-430	GEAR,JOINT	1
340	S5-OP6-005-440	GEAR,MIDDLE	1
341	S5-OP6-005-450	CAM,MAIN	1
342	S5-OP6-005-460	CAM,P5	1
343	S5-OP6-005-650	CAM,PINCH ROLLER	1
344	S5-OP6-005-480	ROD,MAIN	1
345	S5-OP7-000-350	REFLECTOR,LED	1
346	S5-OP8-003-180	SPR,LOADING GEAR	2
347	S5-OP8-003-190	SPR,P5	1
348	S5-OP8-003-210	SPR,BRAKE T	1
349	S5-OP8-003-220	SPR,TENSION	1
350	S5-OP8-003-230	SPR,CAP BRAKE	1
351	S5-OP8-003-420	SPRING,LOCKER(S)	2
352	S5-OP8-003-260	SPR,LINK	1
353	S5-OP8-003-280	SPR,DAMPER	1
354	S5-OP8-003-300	SPR,RING	1
355	S5-OP8-003-320	SPR,S-S BRAKE	1
356	S5-OP9-006-800	OPENER,CASS	1
357	S5-OP9-006-830	CASS SIDE L	1
358	S5-OP9-006-840	CASS SIDE R	1
359	S5-OP9-007-090	TAPE GUIDE L(P,R)	1
360	S5-OP9-006-860	TAPE GUIDE R	1
361	S5-OP9-007-070	COVER,SENSOR L	1
362	S5-OP9-006-880	LEVER,FLAP	1
363	S5-OP9-006-900	CASS HOLDER	1
364	S5-OP9-006-910	LOCKER,L	1
365	S5-OP9-006-920	LOCKER,R	1
366	S5-OP9-006-940	SPR,PACK	2
367	S5-OP9-006-950	BRACKET,TOP	1
368	----	SPR,CASS EARTH	1
369	S5-OP6-005-400	DRIVER,WORM	1
370	S5-OP6-005-630	BRACKET,MOTOR	1
371	S5-OP6-005-410	WORM	1
501	87-654-075-410	SCREW,TAP 2.6-10	1
502	S1-072-268-040	VT2+2.6-8	3
503	87-743-073-010	VT2+2.6-6	3
504	87-743-073-410	SCREW,TAP 2.6-6	3
505	S1-0A1-268-040	SCREW,WASHER(A)M2.6-8	3
506	S1-0B1-264-040	SCREW,WASHER(B)M2.6-4	1
507	87-261-035-410	SCREW,PAN M2-6	3
508	87-261-032-410	SCREW,PAN M2-3	2
509	87-258-091-010	U+M3-3	2
510	S2-Q31-54C-5N0	PW,3.1-5.4-0.25	1
511	S2-P26-600-5N0	PW(CUT)2.6-6-0.5	3
512	S2-Q26-471-3N0	PW 2.6-4.7-0.13	3
513	S2-P18-450-5N0	PW(CUT)1.8-4.5-0.5	1
514	S3-ETW-300-000	E-RING 3	2
515	S1-0A1-235-040	SEMS A M2.3-5	2
CP101	----	CONN,PWB SIDE 52044-0445	1
CP102	----	CONN,PWB SIDE 173979-2	1
H5001	S5-23D-910-340	HEAD,AC HVMXA1072A	1
H5002	S5-43D-020-130	HEAD,FE	1
⚠M101	S5-96P-780-010	MOTOR(LOADING)	1
⚠M2001	S5-94J-980-080	CAPSTAN DD UNIT EP15BC	1
M2003	S5-89V-110-070	MICRO MOTOR	1
PCB550	----	DECK PCB ASS'Y VE8851	1
Q101	S0-007-003-200	PHOTO,TR RPT-38PB113	1
Q102	S0-007-003-200	PHOTO,TR RPT-38PB113	1
⚠UN4001	S5-450-8M5-000	CYLINDER UNIT ASS'Y A54508M50(	1

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		SYSCON PCB ASS'Y
		*** RESISTORS ***
R620	87-025-362-080	RES,M 390-1/6W
⚠ R1005	S6-150-12R-7J0	RES,FUSE 2.7-1W
		*** CAPACITORS ***
C351	87-015-683-080	CAP,E 33-16V
C352	87-010-380-080	CAP,E 47-16V
C354	87-010-387-010	CAP,E 470-25V
C355	87-010-402-080	CAP,E 2.2-50V
C357	87-010-271-080	CAP,E 1000-16V
C359	S5-0HU-347-0M0	CAP,E 47-25V
C605	87-010-402-080	CAP,E 2.2-50V
C611	87-015-683-080	CAP,E 33-16V
C612	87-015-683-080	CAP,E 33-16V
C613	87-015-683-080	CAP,E 33-16V
C614	87-010-380-080	CAP,E 47-16V
C618	87-015-695-080	CAP,E 1-50V
C620	87-010-374-080	CAP,E 47-6.3V
C622	87-015-695-080	CAP,E 1-50V
C626	87-010-400-080	CAP,E 0.47-50V
C632	87-010-560-010	CAP,E 10-50V
C634	87-010-404-080	CAP,E 4.7-50V
C635	87-015-075-040	CAP,E 10-16V
C636	S0-0NU-322-0M0	CAP,E 22-25V
C639	87-010-549-010	CAP,E 47-6.3V
C642	87-010-403-080	CAP,E 3.3-50V
C645	87-015-695-080	CAP,E 1-50V
C651	87-015-075-040	CAP,E 10-16V
C652	87-015-695-080	CAP,E 1-50V
C656	87-A10-189-040	CAP,E 220-10V
C658	87-015-677-010	CAP,E 100-6.3V
C659	87-010-400-080	CAP,E 0.47-50V
C663	87-010-112-080	CAP,E 100-16V
C667	87-010-067-010	CAP,E 0.1-50V
C669	87-010-560-080	CAP,E 10-50V
C674	87-015-677-010	CAP,E 100-6.3V
C693	87-010-112-080	CAP,E 100-16V
C881	87-010-403-080	CAP,E 3.3-50V
C882	87-010-403-080	CAP,E 3.3-50V
C883	87-010-403-080	CAP,E 3.3-50V
C1001	87-010-112-080	CAP,E 100-16V
C1003	S0-001-937-600	CAP,E 0.1F-5.5V
C1013	87-010-076-040	CAP,E 22UF-6.3V
C1016	S0-0NU-047-0M0	CAP,E 47-6.3V
C1020	87-010-444-080	CAP,E 22UF-50V
C1021	87-015-683-080	CAP,E 33-16V
C1029	87-010-374-080	CAP,E 47-6.3V
C1032	87-015-975-080	CAP,E 220-6.3V
C1036	87-010-370-080	CAP,E 330-6.3V
C1037	87-016-088-040	CAP,E 220-6.3V
C1040	87-010-071-080	CAP,E 1-50V
C1042	87-010-071-080	CAP,E 1-50V
C1043	87-010-560-010	CAP,E 10-50V
C1045	87-010-112-080	CAP,E 100-16V
C1046	87-010-385-040	CAP,E 220UF-25V
C1070	87-016-088-040	CAP,E 220-6.3V
C4001	87-015-683-080	CAP,E 33-16V
C4015	87-016-088-040	CAP,E 220-6.3V
C4017	87-016-088-040	CAP,E 220-6.3V
C4024	87-010-403-080	CAP,E 3.3-50V
C4025	87-010-404-080	CAP,E 4.7-50V
C4031	87-010-404-080	CAP,E 4.7-50V
C4036	87-016-334-080	CAP,E 4.7-25V
C4038	87-015-695-080	CAP,E 1-50V
C4039	87-010-404-080	CAP,E 4.7-50V
C4040	87-010-402-080	CAP,E 2.2-50V
C4041	87-010-404-080	CAP,E 4.7-50V
C4042	87-010-400-080	CAP,E 0.47-50V
C4049	87-010-076-040	CAP,E 22UF-6.3V
C4050	87-010-404-080	CAP,E 4.7-50V
C4051	87-015-075-040	CAP,E 10-16V
C4055	87-010-374-080	CAP,E 47-6.3V
C4057	87-010-404-080	CAP,E 4.7-50V
C4069	87-010-549-010	CAP,E 47-6.3V
C4071	87-015-075-040	CAP,E 10-16V
C4073	87-010-403-080	CAP,E 3.3-50V
C4074	87-015-075-040	CAP,E 10-16V
C4078	87-010-402-080	CAP,E 2.2-50V
C4084	87-016-088-040	CAP,E 220-6.3V
C4088	87-010-549-010	CAP,E 47-6.3V
C4102	87-016-088-040	CAP,E 220-6.3V
C4108	87-010-235-080	CAP,E 470-16V
C4504	87-015-075-040	CAP,E 10-16V
C4506	87-010-112-080	CAP,E 100-16V
C4508	87-015-695-080	CAP,E 1-50V
C4509	87-010-378-080	CAP,E 10-16V
C4518	87-010-067-010	CAP,E 0.1-50V
C4522	87-015-075-040	CAP,E 10-16V
		*** DIODES ***
D601	87-020-465-010	DIODE,1SS133T
D602	87-020-465-010	DIODE,1SS133T
D603	87-020-465-010	DIODE,1SS133T
D604	S2-8T1-1ES-N10	DIODE,11ES1N-TA1B2
D605	87-017-931-010	ZENER,MTZJ5.6B
D852	87-020-465-010	DIODE,1SS133T
D1001	S2-LXE-658-000	DIODE,1N4005E-G23
D1002	87-020-465-010	DIODE,1SS133T
D1003	S0-106-000-600	LED,SID1050CM
D1004	S2-LXE-658-000	DIODE,1N4005E-G23
D1005	S9-2T1-120-B00	ZENER,RD12FB-T7
D1006	S2-3U1-003-A30	DIODE,SB10-03A3
D1007	S2-8T0-11E-100	DIODE,11E1TA1
D1008	87-017-931-010	ZENER,MTZJ5.6B
D1009	S2-LXE-658-000	DIODE,1N4005E-G23
D1010	S2-3U1-003-A30	DIODE,SB10-03A3
D1011	87-020-465-010	DIODE,1SS133T
D1012	87-020-465-010	DIODE,1SS133T
D1014	87-020-465-010	DIODE,1SS133T
D1015	87-020-465-010	DIODE,1SS133T
D1017	87-020-465-010	DIODE,1SS133T
D1018	S2-8TE-QS0-400	DIODE,11EQS04N-TA
D1019	S2-8TE-QS0-400	DIODE,11EQS04N-TA
D1020	S2-8TE-QS0-400	DIODE,11EQS04N-TA
D4001	S3-Z68-V10-000	ZENER,MTZJ6.8B
D4002	S3-Z68-V10-000	ZENER,MTZJ6.8B
D4003	S0-400-721-010	DIODE,RB721Q
D4202	S2-8T1-1ES-N10	DIODE,11ES1N-TA1B2
D4501	S9-7U0-130-1B0	ZENER,MTZJ13B
D4502	S9-7U0-130-1B0	ZENER,MTZJ13B
D4503	87-020-465-010	DIODE,1SS133T
D4505	S9-7U0-120-1B0	ZENER,MTZJ12B T-77
D4506	S9-7U0-120-1B0	ZENER,MTZJ12B T-77
D4507	S9-7U0-120-1B0	ZENER,MTZJ12B T-77
D4508	S9-7U0-120-1B0	ZENER,MTZJ12B T-77
D4510	87-020-465-010	DIODE,1SS133T
D4511	87-020-465-010	DIODE,1SS133T
		*** ICS ***
IC352	S0-FSP-752-300	IC,AN7523

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		*** ICS ***
IC601	S0-3DE-681-200	IC,LA76812
IC602	S0-Q09-780-500	IC,NJM7805FD
IC1001	S0-7SQ-955-AN0	IC,BA6955AN
IC1002	SE-1J0-S31-AH0	IC,RE5VS31A
IC1003	S0-3FE-772-V00	IC,LC74772V
IC1006	S5-4F5-007-8C0	IC,OEC0078C
IC1099	S5-455-3M0-150	IC,S-24C08ADPA-01
IC4001	S0-4F3-821-7F0	IC,HA118217F
		*** TRANSISTORS ***
Q351	87-026-447-010	TR,2SC1740SP(R,S)
Q352	87-026-228-080	TR,DTA124EK
Q353	89-324-122-080	TR,2SC2412KT
Q601	SC-3T0-300-000	TR,2SC3000
Q607	84-LB2-698-080	TR,2SA733(C)-T
Q608	89-109-330-010	TR,2SA933STP
Q1001	8Z-JU1-603-010	PHOTO,COUPLER GP1S566
Q1002	89-324-122-080	TR,2SC2412KT
Q1003	S0-02G-004-900	PHOTO,COUPLER GP1S94L
Q1005	8Z-JU1-603-010	PHOTO,COUPLER GP1S566
Q1006	89-324-122-080	TR,2SC2412KT
Q1008	87-026-236-080	TR,DTC124EK
Q1009	S0-02G-004-900	PHOTO,COUPLER GP1S94L
Q1010	87-026-227-080	TR,DTA114E
Q1011	SD-70D-239-600	TR,2SD2396(J,K)
Q1012	89-324-122-080	TR,2SC2412KT
Q1014	89-324-122-080	TR,2SC2412KT
Q1015	89-324-122-080	TR,2SC2412KT
Q1016	89-324-122-080	TR,2SC2412KT
Q1019	SB-3T0-089-200	TR,2SB892(
Q1020	87-026-287-080	TR,DTC143EKAT146
Q1021	89-324-122-080	TR,2SC2412KT
Q4001	SD-3T0-073-400	TR,2SD734(E,F,G)-AA
Q4002	SD-3T0-073-400	TR,2SD734(E,F,G)-AA
Q4003	87-026-228-080	TR,DTA124EK
Q4004	89-322-746-010	TR,2SC2274
Q4005	89-322-746-010	TR,2SC2274
Q4006	89-110-372-080	TR,2SA1037AK
Q4007	89-324-122-080	TR,2SC2412KT
Q4201	SN-YTB-050-010	TR,DTC114E
Q4501	89-324-122-080	TR,2SC2412KT
Q4502	89-110-372-080	TR,2SA1037AK
Q4505	89-324-122-080	TR,2SC2412KT
Q4507	89-324-122-080	TR,2SC2412KT
Q4509	89-324-122-080	TR,2SC2412KT
Q4510	89-324-122-080	TR,2SC2412KT
Q4511	89-324-122-080	TR,2SC2412KT
Q4512	89-324-122-080	TR,2SC2412KT
		*** COILS ***
B1001	S2-4AC-360-1C0	CORE,BEADS BLM21A601SPT
B4501	S2-4AC-360-1C0	CORE,BEADS BLM21A601SPT
B4502	S2-4AC-360-1C0	CORE,BEADS BLM21A601SPT
L002	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10
L601	S2-167-D10-1K0	COIL,100UH
L603	87-003-146-010	COIL,15UH
L604	S2-1LA-6R2-2M0	COIL,0.22 LAP02TAR22M
L605	S2-167-D10-1K0	COIL,100UH
L606	87-A50-040-010	COIL,2.2UH
L608	S3-360-K04-380	COIL,V IFT 360K043
L609	S2-167-D10-1K0	COIL,100UH
L610	S2-16S-72R-2J0	COIL,2.2UH NL252018T-2R2J
L820	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10
L1001	87-003-148-010	COIL,33UH

REF.NO.	PART NO.	DESCRIPTION
		*** COILS ***
L4001	S3-262-300-380	COIL,TRAP 2623003
L4002	S2-167-D10-1K0	COIL,100UH
L4003	S2-167-D10-1K0	COIL,100UH
L4004	S2-167-D10-1K0	COIL,100UH
L4005	S3-162-600-880	COIL,BIAS OSC 1626008
L4006	87-003-112-010	COIL,1MH
L4008	87-003-112-010	COIL,1MH
L4009	S2-167-D10-1K0	COIL,100UH
L4011	87-003-282-010	COIL,12UH
L4012	87-003-154-080	COIL,220UH
L4013	S2-167-D10-1K0	COIL,100UH
L4015	S2-167-D10-1K0	COIL,100UH
L4016	87-003-285-010	COIL,39UH
L4501	87-003-152-010	COIL,100UH
L4502	87-003-152-010	COIL,100UH
L4503	87-003-102-010	COIL,10UH
L4504	87-003-102-010	COIL,10UH
		*** JACK ***
J4501	S6-3G1-000-370	SOCKET,21PIN 035_0_9985_0
		*** SWITCH ***
SW1001	S5-082-210-010	SW,LEAF SPVF130100
		*** CONNECTORS ***
CP351	S6-9E2-701-290	CONN,PWB SIDE
CP603	S6-9E2-901-290	CONN,PWB SIDE
CP757	S6-9E2-A01-290	CONN,PWB SIDE
CP1004	S6-972-805-900	CONN PWB SIDE TMC-J08P-B1
CP1005	S6-9R7-500-280	CONN,PWB SIDE 52045-0545
CP1006	S6-9R7-400-280	CONN,52045-0445
CP4001	S6-972-406-000	CONN,PCB SIDE TOC-C04X-B1
CP4004	S6-971-203-200	CONN,TMC-TD2X-E1
		*** FILTERS ***
CF601	S0-22V-39R-520	FILTER,SAW SAF39.5MZL220ZL
CF602	S0-12T-041-010	CER,FLTR MKT41.5MA110
		*** CRYSTAL & CERAMIC OSCILLATORS ***
X601	S0-0CT-4R4-060	X'TAL HC-94/U
X1001	S0-0CT-010-020	X'TAL,HC-49/U
X1002	S0-0D3-2R8-010	X'TAL,32.768K
X4001	S0-0CT-4R4-070	X'TAL HC-49/U
		*** TUNER ***
TU601	S1-44W-070-230	TUNER,UHF
		*** OTHERS ***
CD601	S6-CH0-100-8A0	CORD CONN CH01008A
CD810	S6-CH2-A01-4A0	CORD,CONN CH2A014A
CD820	S6-CH2-B02-5A0	CORD CONN CH2B025A
CD850	S6-CH2-508-0A0	CORD CONN CH25080A
CD1002	S6-CH2-207-6A0	CORD CONN CH22076A
CD1004	S6-CH0-140-8A0	CORD,CONN CH01408A
		*** CAPACITORS ***
C353	87-010-380-080	CAP,E 47-16V
C354	87-010-380-080	CAP,E 47-16V
C755	87-016-088-040	CAP,E 220-6.3V

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		OPERATOIN PCB ASS'Y
		*** DIODES ***
D791	S0-21M-2Q1-200	LED,EQ-552-F1T
D792	S0-21M-2Q1-200	LED,EQ-552-F1T
D793	S0-21M-2Q1-200	LED,EQ-552-F1T
D796	S0-21M-5Q1-500	LED,EM-553-F1T
D797	S0-21M-2Q1-200	LED,EQ-552-F1T
		*** COILS ***
B701	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6
B702	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6
L004	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10
L005	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10
		*** JACKS ***
J351	S6-021-310-120	JACK,RCA 3.5 HSJ2630-0100
J701	S6-021-010-200	JACK,RCA
		*** SWITCHES ***
SW750	S5-042-01T-310	SW,TACT SKHVBED010
SW751	S5-042-01T-310	SW,TACT SKHVBED010
SW791	S5-042-01T-310	SW,TACT SKHVBED010
SW792	S5-042-01T-310	SW,TACT SKHVBED010
SW793	S5-042-01T-310	SW,TACT SKHVBED010
SW794	S5-042-01T-310	SW,TACT SKHVBED010
SW795	S5-042-01T-310	SW,TACT SKHVBED010
SW796	S5-042-01T-310	SW,TACT SKHVBED010
SW797	S5-042-01T-310	SW,TACT SKHVBED010
SW798	S5-042-01T-310	SW,TACT SKHVBED010
SW799	S5-042-01T-310	SW,TACT SKHVBED010
		*** OTHERS ***
CD351	S6-CH2-708-7A0	CORD CONN CH27087A
CD750	S6-CH2-A01-4A0	CORD,CONN CH2A014A
OS753	S7-7Q0-000-170	REMOTE RECEIV
		MAIN PCB ASS'Y
		*** RESISTORS ***
R411	87-022-629-080	RES,M/F 11K-1/6W
⚠ R447	87-A00-100-060	RES,FUSE 68-1/2W
R448	SF-F01-02J-B10	RES,M 1K-1W
⚠ R449	S5-X2C-E10-3J0	RES,CEMENT 10K-7W
⚠ R450	87-A00-106-060	RES,FUSE 3.3-1W
⚠ R452	S6-558-1R6-8J0	RES,FUSE 0.68-1W
R501	S5-K2C-E2R-2J0	RES,CEM 2.2-7W
R505	S3-X28-B27-3J0	RES,M 27K-3W
⚠ R510	S3-X28-B3R-3J0	RES,M 3.3-3W
⚠ R512	S3-X18-127-3J0	RES,M 27K
⚠ R526	S3-X28-B01-0J0	RES,M 1-3W
R529	S4-X5T-627-2F0	RES,M 2.7K-1/6
⚠ R542	S3-218-1R3-9J0	RES,MO 0.39-1W
⚠ R543	S6-35U-268-1J0	RES,FUSE 680-1/2W
		*** CAPACITORS ***
C401	87-016-636-080	CAP,E 4.7-50V
C403	87-010-560-080	CAP,E 10-50V
C405	87-016-636-080	CAP,E 4.7-50V
C406	S5-EZT-410-1M0	CAP,E 100-35V
C407	87-016-588-080	CAP,E 2200-25V
C411	S1-220-512-000	CAP,MPL 0.47-100V
C412	S0-JTB-05N-2K0	CAP,CER 390P-500V
C413	S6-11T-110-4J0	CAP,MPL 0.1-100V T
C417	S0-JTB-05S-2K0	CAP,CER 560PF-500V
C418	S5-EZT-B01-0M0	CAP,E 1-160V
C421	S5-EZ0-410-2M0	CAP,E 1000-35V
C422	S5-EZT-D01-0M0	CAP,E 1-250V
C423	S4-11F-347-4J0	CAP,MPP 0.47-250V
C424	S4-14F-939-2H0	CAP,MPP 0.0039-1.6KV
C425	S0-34B-N7W-2K0	CAP,CER 820P-2KV BP
C429	87-012-386-080	CAP,CER 470PF-2KV
C431	87-016-373-080	CAP,E 10-250V
C432	S1-220-512-000	CAP,MPL 0.47-100V
C434	S3-N1F-222-3J0	CAP,0.022-200V
C438	87-010-977-010	CAP,CER 680PF-500V
C450	S0-1BB-P7B-2K0	CAP,CER 120P-2KV
C501	87-010-244-040	CAP,E 22 10 V
⚠ C505	S2-122-B22-4M0	CAP,0.22-250V E
⚠ C506	S2-122-B10-4M0	CAP,MP 0.1-250V
⚠ C507	S1-9A0-C01-040	CAP,E 100-400V
⚠ C508	SB-393-0M1-3M0	CAP,CER 0.001-250V
C510	S5-EZT-422-1M0	CAP,E 220-35V
C511	S5-EZT-247-1M0	CAP,E 470-16V
C513	S5-EZT-522-0M0	CAP,E 22-50V
C514	S0-1BB-P7E-3K0	CAP,0.0015-2KV BP
C516	87-012-376-010	CAP,CER 470PF-500V
C517	S0-34B-N7G-3K0	CAP,CER 0.0018-2KV
C518	87-012-376-010	CAP,CER 470PF-500V
C519	87-012-376-010	CAP,CER 470PF-500V
C520	87-001-271-080	CAP,E 1000-16V
C521	S5-3J0-B22-1M0	CAP,E 220-160V
C523	S5-EZT-447-1M0	CAP,E 470-35V
C524	S5-EZT-310-2M0	CAP,E 1000-25V
C526	S5-EZT-147-1M0	CAP,E 470-10V
C527	S0-34B-N7Q-2K0	CAP,CER 470P-2KV BP
⚠ C530	SB-393-0M1-3M0	CAP,CER 0.001-250V
C531	87-010-271-080	CAP,E 1000-16V
C532	S5-EZT-247-1M0	CAP,E 470-16V
C536	S5-EZT-247-1M0	CAP,E 470-16V
C537	87-015-694-080	CAP,E 0.47-50V
C538	S5-EZT-147-1M0	CAP,E 470-10V
C540	S5-EZT-B10-0M0	CAP,E 10-160V
C541	S6-2DF-B47-0M0	CAP,E 47-160V
		*** DIODES ***
D401	S2-8T1-1E1-N10	DIODE,11E1N-TA1B2
D411	S2-LTP-G06-J00	DIODE,RMPG06J
D413	S2-LTP-G06-J00	DIODE,RMPG06J
⚠ D501	SG-P15-ML0-000	DIODE,GP15M-G23
⚠ D502	SG-P15-ML0-000	DIODE,GP15M-G23
⚠ D503	SG-P15-ML0-000	DIODE,GP15M-G23
⚠ D504	SG-P15-ML0-000	DIODE,GP15M-G23
⚠ D505	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
D506	S2-LTP-G06-J00	DIODE,RMPG06J
D507	S2-BTR-U2Y-X00	DIODE,RU2YX-V1
D508	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
⚠ D509	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
⚠ D510	S2-BTR-U2A-M00	DIODE,RU2AM V1
D511	S2-8T1-0EL-S20	DIODE,10ELS2N-TA1
⚠ D512	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B
D515	87-002-743-080	ZENER,MTZJ33B T77
D516	87-020-465-010	DIODE,1SS133T
D517	87-020-465-010	DIODE,1SS133T
D518	87-A40-172-080	DIODE,EG01Z-V0
⚠ D519	S2-8T2-1DQ-N90	DIODE,21DQ09N-TA2B

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
		*** DIODES ***
D521	87-A40-172-080	DIODE,EG01Z-V0
D523	87-020-465-010	DIODE,1SS133T
D525	S2-BT0-EG0-1C0	DIODE,EG-01C
D528	87-017-931-010	ZENER,MTZJ5.6B
D529	87-020-465-010	DIODE,1SS133T
D533	S2-8TE-QS0-400	DIODE,11EQS04N-TA
TH501	S8-R0F-140-M00	DEGAUSS PTH451C26
		*** ICS ***
⚠ IC401	87-A20-128-010	IC,LA7840
⚠ IC501	S2-BT0-670-700	IC,STR-F6707
⚠ IC502	S0-Q09-780-500	IC,NJM7805FD
⚠ IC503	S0-GA9-09R-D00	IC,PQ09RD08
⚠ IC504	87-001-576-010	IC,NJM7812FA
IC505	87-A20-790-010	IC,KIA7806P
⚠ IC506	S0-021-000-1R0	PHOTO,COUPLER ON3171R
		*** TRANSISTORS ***
Q405	SC-3T0-227-100	TR,2SC2271(D,E)-AE
⚠ Q406	SD-UQ0-259-900	TRANSISTOR SILICON 2SD2599
Q501	SC-3T0-290-900	TR,2SC2909
⚠ Q502	SA-3T1-371-A00	TR,2SA1371
⚠ Q503	SC-300-416-000	TR,2SC4160-OEC
Q504	89-318-154-080	TR,2SC1815Y
Q506	87-026-464-080	TR,DTC114TS
Q507	89-309-458-010	TR,2SC945(C)
Q513	SN-YTB-030-010	TR,DTC114E
		*** COILS ***
B504	S2-4AT-036-550	CORE,BEADS BL01RN1-A63T6
B505	S2-4A8-407-C30	CORE,BL02RN2-R62T2
L401	87-003-143-010	COIL,4.7MH
L402	S2-210-000-130	COIL,LINEA ELH5L4112
L403	87-003-150-010	COIL,68UH
⚠ L501	S2-9X0-000-520	FILTER,
⚠ L502	S2-9X0-000-650	FILTER,SU16V-2
T401	S3-305-Y00-2S0	TRANS,H DRIVE 305Y002S
		*** TRANSFORMER ***
⚠ T501	S4-813-504-0W0	TRANS SWITCHING 8135040W
		*** VARIABLE RESISTOR ***
VR502	S1-263-L2B-TC0	SFR,RH063MCN2R07
		*** CONNECTORS ***
CP401	S6-9X4-500-290	CONN PWB SIDE B05B-DVS
CP501	S6-973-200-390	CORD UX CONNECTOR
CP810	S6-9E2-A01-290	CONN,PWB SIDE
CP820	S6-9E2-B01-290	CONN,PWB SIDE
		*** FUSES ***
CP803A	S6-7R1-050-190	HOLDER,WIRE 51052-0500
⚠ F501	S8-0PT-040-020	FUSE,4A-250V T
⚠ F502	S8-08T-1R6-020	FUSE,
FH501	S6-710-T00-060	HOLDER,FUSE EYF-52B
FH502	S6-710-T00-060	HOLDER,FUSE EYF-52B

REF.NO.	PART NO.	DESCRIPTION
		*** FUSES ***
FH503	S6-710-T00-060	HOLDER,FUSE EYF-52B
FH504	S6-710-T00-060	HOLDER,FUSE EYF-52B
		*** RELAY ***
⚠ RY501	S5-60Q-102-010	RELAY,SDT-S-109LMR
		*** OTHERS ***
⚠ ICP502	S8-3PC-040-020	MICRO FUSE 251004
⚠ ICP503	S8-3PC-050-020	MICRO FUSE,251005
ICP504	S8-3PC-050-020	MICRO FUSE,251005
⚠ ICP505	S8-3PC-020-020	MICRO FUSE
		CRT PCB ASS'Y
		*** RESISTORS ***
⚠ R802	87-A00-164-090	RES,M 12K-2W
⚠ R805	87-A00-164-090	RES,M 12K-2W
⚠ R810	87-A00-164-090	RES,M 12K-2W
		*** CAPACITORS ***
C801	S0-JBB-07H-3K0	CAP,CER 0.0022-2KV
C819	S0-JBB-07H-3K0	CAP,CER 0.0022-2KV
C820	S0-ELT-D4R-7M0	CAP,E 4.7-250V
		*** TRANSISTORS ***
Q804	SC-3F0-421-700	TR,2SC4217(D,E)
Q805	SC-3F0-421-700	TR,2SC4217(D,E)
Q806	SC-3F0-421-700	TR,2SC4217(D,E)
		*** COIL ***
L801	S2-167-F10-0J0	COIL,10 EL0305RA-100J
		*** CONNECTORS ***
CP850	S6-9E2-501-290	CONN,PWB SIDE
		*** FUSE ***
CP803B	S6-7R1-050-190	HOLDER,WIRE 51052-0500
		*** CRT SOCKET ***
⚠ J801	S6-6X1-200-140	SOCKET,CRT HPS320
		POWER SW PCB ASS'Y
		*** SWITCH ***
⚠ SW501	S5-302-050-010	SW,PLUS SDDFC3056A
		*** CONNECTOR ***
CP504	S6-973-200-390	CORD UX CONNECTOR
		*** AC CORD ***
CD501	S2-066-358-230	CORD AC 1206635823
		*** OTHER ***
CD502	S6-CPU-201-2A0	CORD CONN CPU2012A

ELECTRICAL REPLACEMENT PARTS LIST

	REF.NO.	PART NO.	DESCRIPTION
			AND OTHERS
			*** COILS ***
	L001	S2-A6A-8A0-A10	CORE,FERRITE HF57T18.5*10*10
⚠	L503	S2-8F1-400-180	COIL,DEGAUSS 8F140018
			*** TRANSFORMER ***
⚠	FB401	S4-321-402-9F0	TRANS FLYBACK 3214029F
			*** OTHERS ***
	CD354	S6-CH1-243-4A0	CORD CONN CH12434A
	SP351	S7-0C5-330-080	SPEAKER,810-47-171
	SP352	S7-0C5-330-080	SPEAKER,810-47-171
⚠	V801	S9-8P1-404-960	CRT W/DY A34AGT13-07